# Exhibit 30

# THOMAS JEFFERSON HIGH SCHOOL FOR SCIENCE AND TECHNOLOGY: IMPROVING ADMISSIONS PROCESSES

Research and Proposal

Office of Research and Strategic Improvement
Office of TJHSST Admissions
Chief Operating Office

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## Background

Since it was established in 1985, Fairfax County Public Schools' (FCPS) Thomas Jefferson High School for Science and Technology (TJHSST) has been a leader in providing science, technology, engineering, and mathematics (STEM) education. Its founding principles included the following elements:

1. To initiate, develop, and maintain a close cooperative and collaborative relationship with the business and industrial community in the design, conduct, assessment, and continual updating of the school and its programs.
2. To create a high school environment for state-of-the-art instruction and learning experiences designed to enhance the opportunities interested students have in acquiring more specific and advanced skills in and knowledge about selected sciences and high technology specialties.
3. To include specialized laboratory environments in selected high technology areas to induced detailed and explicit interfaces with and, requirements for interdisciplinary instruction in the mathematics and science curriculum areas.
4. To design an exemplary and unique high school program that assures completion of the requirements for graduation; superior preparation for access to collegiate admission and other post-secondary educational opportunities in science, engineering, and technology; and opportunity and skills for immediate employment upon graduation in selected high technology, scientific, and engineering occupations.
5. To identify sources of potential support and to solicit and obtain resources to assist in the timely and effective realization of the school.
6. To design, construct (or renovate), and equip an appropriate facility to house the proposed school and its complement of supporting programs and services.
7. To initiate and maintain, with the school for science and technology the focus, a strong and continuing program of teacher in-service and other appropriate experiences in selected high technology laboratory environments to include opportunities for younger student participation in selected experiences and events.

TJHSST's current mission is "to provide students with a challenging learning environment focused on math, science, and technology, to inspire joy at the prospect of discovery, and to foster a culture of innovation based on ethical behavior and the shared interests of humanity." FCPS is committed to providing a high-quality, specialized high school program for students with an interest in STEM who reside in Fairfax County or other Virginia school divisions and cities served by TJHSST (i.e., Arlington, Loudoun, and Prince William counties, as well as the cities of Fairfax and Falls Church). Research has highlighted the importance of advanced STEM opportunities, such as those available to TJHSST students, in future real world accomplishments.[1] Since its inception, business and industry leaders have provided vital support to TJHSST, and TJHSST alumni have become leaders in a variety of science-related fields. TJHSST is best able to serve its community and alumni when those alumni are prepared—through development of fundamental knowledge, leadership, and interpersonal skills—to learn, work, and live in an ever-changing and increasingly diverse global society. In fact, FCPS Policy 3355.4, which guides the TJHSST admissions process, specifies that

[1] Wai, J., Lubinski, D., Benbow, C. P., & Steiger, J. H. (2010). Accomplishment in Science, Technology, Engineering, and Mathematics (STEM) and Its Relation to STEM Educational Dose: A 25-Year Longitudinal Study. Journal of Educational Psychology, 102 (4), 860-871.

"Diversity of the student body and staff enhances the robust exchange of ideas and is an important factor in developing leaders who will be prepared to address future scientific and technological challenges."

This document:

- lays out challenges to ensuring that TJHSST admits students who are not only prepared for and interested in the highly specialized STEM offerings provided by the school, but also contributes to a diverse student body that enriches the educational experience and enhances preparedness to work in a diverse global society;
- describes potential remedies to current admissions challenges with support from research and data; and
- recommends a potential approach to overcome the admissions challenges that are currently seen, with a data-based justification on what should be expected to deem changes effective, along with other supports to put in place with the revised admissions process.

## Research on the Importance of Diversity

As one recent review of research evidence on the impacts of diversity within a public school setting described it, there is currently a "lack of focus on the educational benefits of diversity within racially and ethnically diverse public schools."[2] In particular, these authors noted both in their review and in other reports that most studies examining diversity within the K12 setting have focused narrowly on achievement scores, rather than more broadly on educational benefits for students. They lament that research about diversity in public schools has bypassed the potential benefits of racially diverse schools and classrooms in favor of a focus on accountability for racially, ethnically, and socioeconomically segregated settings.[3] Further, the empirical evidence stemming from a focus on accountability in achievement scores within diverse schools is mixed.[4] Nonetheless, the authors of the review highlighted that research within higher education, which has documented benefits of diversity, should be considered applicable to the K12 environment. Further, the types of positive educational outcomes that have been documented as linked to diversity within a higher education setting appear particularly beneficial to students within the context of a STEM-focused high school, where problem-solving and innovation are prized.

At the higher education level, exposure to students who are different from themselves, along with the novel ideas and challenges that such exposure brings, has been associated with improved cognitive skills, including critical thinking, problem solving, and perspective taking. Diversity encourages students to question their assumptions, to understand that wisdom may be found in unexpected voices, and to gain an appreciation of the complexity of today's world. For example, one research study found that the more first-year college students are exposed to diverse educational settings, the greater their intellectual engagement and intercultural effectiveness. Diverse classrooms, in which students learn cooperatively alongside those whose perspectives and backgrounds are different from their own, are beneficial to all students, including middle-class white students, because they promote creativity, motivation, deeper learning, critical thinking, and problem-solving skills.

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[2] Wells, A. S., Fox, L., & Cordova-Cobo, D. (2016). *How racially diverse schools and classrooms can benefit all students*. New York: The Century Foundation.

[3] Wells, A.S., Fox, L., & Cordova-Cobo, D. (2016*). Research fact sheet: The educational benefits of diverse schools and classrooms for all students*. Washington, DC: American Educational Research Association.

[4] U.S. Commission on Civil Rights (2006). *The Benefits of Racial and Ethnic Diversity in Elementary and Secondary Education*. Retrieved from https://files.eric.ed.gov/fulltext/ED514057.pdf.

Additionally, businesses have highlighted the importance of students learning within a diverse environment. Calling it a "business and economic imperative," Fortune-100 companies have argued in support of diversity at the college and university level by highlighting that individuals must enter the workforce with experience in sharing ideas, experiences, viewpoints, and approaches with diverse groups of people and be able to operate in national and global economies that are increasingly diverse.[5] These companies argue that such college graduates provide more creative approaches to problem-solving by integrating different perspectives and moving beyond linear, conventional thinking.

Thus, overall, the types of outcomes research have linked to learning within a diverse educational setting support both positive educational and employment outcomes that are important and supportive of success by students attending a STEM high school.

## Research and Data on Admissions Challenges

### TJHSST Admissions Process Used Last Year (Class of 2024)

In school year (SY) 2019-20, admissions to TJHSST relied upon a multi-stage approach. In keeping with best practices that multiple criteria be considered when selecting students for talent development programs, the process included consideration of multiple components. As shown in Table 1, at the first stage, students were required to demonstrate certain core requirements to apply for admissions. To be considered an eligible applicant, students had to demonstrate academic success (3.0 GPA), participation in advanced mathematics (Algebra I), and satisfy residency requirements in Fairfax County or other participating school divisions. Once an application was made, test performance data was gathered about applicants (Quant-Q, ACT Aspire Reading, ACT Aspire Science). Students scoring at or above threshold levels on these exams (typically amounting to approximately half the applicant pool) became semi-finalists. Lastly, decisions about which students to admit were based on a holistic evaluation of each semi-finalist by rating panels that considered test performance, teacher recommendations, response to a problem-solving essay, and responses to a student information sheet (SIS).

**Table 1: SY 2019-20 (Class of 2024) Admissions Stages and Components**

| Stage | Components |
|---|---|
| Applicant | 3.0 GPA in core academic classes (7th grade final grades, 8th grade 1st quarter grades)<br>Enrolled in Algebra I or have a credit for Algebra I<br>Satisfy residency requirements<br>Pay $100 fee or receive fee waiver |
| Semi-Finalist | Achieve sufficient scores on exams (Quant-Q, ACT Aspire Reading, ACT Aspire Science) and GPA |
| Decision | Two Teacher Recommendations<br>Student Information Sheet (SIS) responses<br>Problem-solving Essay response |

The SY 2019-20 process culminated in 486 admission offers for the TJHSST Class of 2024, with fell short of the goal of improving ethnic, racial and socio-economic diversity. Thus, the most recent class admitted to TJHSST was not capitalizing on the diversity of the counties and cities from which students are drawn and,

[5] Brief of Fortune-100 and Other Leading American Businesses as *amici curiae* in Support of Respondents in *Fisher v. University of Texas at Austin,"* November 2, 2015. Retrieved from https://utexas.app.box.com/s/3rh1sfi5w8f5vqydnfub8g9edrs3g4pt

therefore, limited the benefits that students attending TJHSST might receive from a more diverse student body.

## History of the TJ Admissions Processes

The demographic makeup of the Class of 2024 was typical of classes admitted to TJHSST over the last decade. In fact, even as FCPS implemented adjustments to the admissions process specifically aimed at improving diversity at the school, admissions of each class demonstrated decreasing diversity. Thus, while FCPS leaders and TJHSST Admissions staff regularly review the school's policies and procedures for admissions to identify what might need clarification or better serve the needs and goals of the TJHSST community, identified improvements did not have the desired impacts with respect to diversity. Listed below are the policies and procedures, including its approach to student admissions. More specifically, over the past ten years, the admissions process has undergone a series of changes that were intended to impact issues of diversity and inclusion. Nonetheless, as described in the data below, these changes have not made a significant impact on the diversity of the applicants or admitted students.

As shown in Table 2, multiple changes were made to the process over the last decade. As described in the table, several were specifically undertaken to improve the potential for underrepresented students to gain admissions. Some change were undertaken for other reasons.

**Table 2: Changes to Admissions Process and Staffing Over the Last Decade**

| Timeline | Change | Intention |
|---|---|---|
| SY 2011-12 (Class of 2016) | A. Created outreach specialist position | Increase the ability of the Admissions Office to conduct outreach for underrepresented student populations (racial/ethnic, school, etc.) |
| SY 2013-14 (Class of 2018) | B1. Shifted to holistic review of candidates | Align with revisions made by the FCPS School Board to Policy 3355.4 |
| | B2. Began proctoring completion of the Student Information Sheet (SIS) | Eliminate direct assistance applicants might be receiving in writing SIS responses, which might have been placing underrepresented students at a disadvantage |
| SY 2014-15 (Class of 2019) | C. Adjusted sliding scale for GPA/test score, including lowering of minimum overall test score | Increase the number of semifinalists, which might enlarge the number of underrepresented students who reached the semifinalist stage of the process |
| SY 2015-16 (Class of 2020) | D. Problem Solving Essay Added | Incorporate problem solving around a unique problem into admissions considerations |
| SY 2016-17 (Class of 2021) | E. Outreach Specialist Reduced to 0.5 Position due to budget constraints | Address budgetary constraints |
| SY 2017-18 (Class of 2022) | F. New Tests Introduced (Quant-Q, ACT Aspire Science and ACT Aspire Reading) | Replace discontinued admissions exam<br>Include Science test as part of admissions process |

Each change is explained in more detail:

- Class of 2016 (SY 2010-11): The creation of an outreach specialist position occurred during this year. The position was created based on recommendations from the Blue Ribbon Commission about improving diversity in TJHSST admissions, which had issued its report in 2004. The Commission had

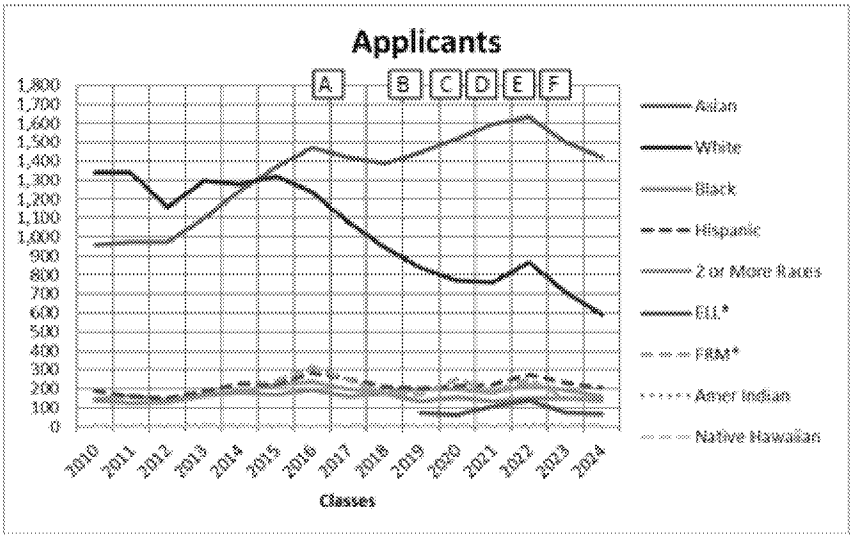
recommended the position to allow focused outreach efforts to underrepresented student populations. Since creation of the position, outreach initiatives have been directed toward maintaining or increasing interest from racial/ethnic groups, schools, and regions underrepresented at TJHSST.

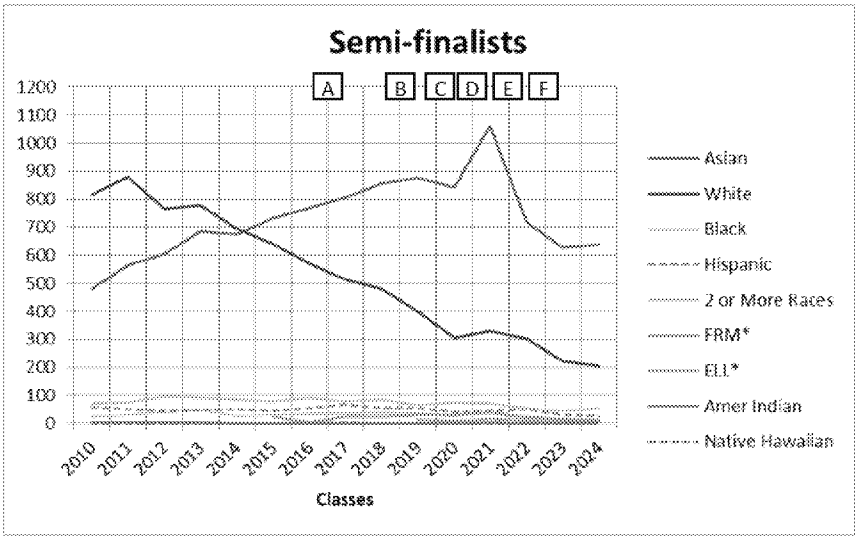
- Class of 2018 (SY 2012-13): During this admissions cycle, FCPS made two substantive changes to the admissions process: (a) shift to holistic review; and (b) proctoring the completion of the Student Information Sheet (SIS). The change in the review process moved away from a ranking of applicants with composite scores (based on individually scored components in the application process) to a holistic review of all application components. The shift in procedure was the result of changes made by the School Board to FCPS Policy 3355 (https://go.boarddocs.com/vsba/fairfax/Board.nsf/files/9BHHQF4997CB/$file/P3355.pdf). Implementation of a proctored Student Information Sheet (SIS), which had previously been included in the application materials submitted by students, was undertaken to ensure that applicants did not receive assistance when completing the SIS. These changes impacted the Class of 2018 to the present.
- Class of 2019 (SY 2013-14): During this admissions year, the sliding scale for minimum GPA and test score combination was adjusted by lowering the overall verbal and quantitative test score five points within each GPA category. Consequently, while prior applicants with a GPA above 3.5 had to have a combined test score of at least 65; following this adjustment, applicants needed a test score of 60. Similarly, the test score requirements to become a semifinalist for GPAs of 3.3 and 3.0 were adjusted downward from 70 and 75 to 65 and 70, respectively. The change in the sliding scale was implemented to allow more students to meet the semifinalist requirements. The requirement that semifinalists score at least 30 on the quantitative section of the test remained unchanged.
- Class of 2020 (SY 2015-16): For the Class of 2020the essay was changed from a persuasive essay about an ethical science topic to a math/science based problem-solving essay. The change allowed the admissions process to include a component focused on students' abilities to problem solve around a unique question. The revised essay requires a student to both to solve the problem and to describe how they solved the problem in essay format. This moved the essay toward incorporating critical thinking and problem solving as components of the admissions process and away from the writing skills assessed by the previous prompt.
- Class of 2021 (SY 2016-17): In the Spring of 2017, the TJHSST Admissions Office was identified for a staff reduction. This reduction resulted in the loss of a 0.5 Outreach Specialist position. The impact of a reduction of staff led to fewer opportunities to engage in the critical outreach initiatives underway and required a shift in approach to outreach.
- Class of 2022 (SY 2017-18): The admissions exam changed vendors and format. The previous TJ Admissions Exam was a customized version of the Specialized High Schools Admissions Test produced specifically for the TJHSST admissions process. It included both mathematics and verbal sections. The vendor discontinued the production of this specialized exam. After a thorough review of potential alternate exams, recommendations were made to move forward with a combination of replacement exams: the Quant-Q, the ACT Aspire Science, and the ACT Aspire Reading. The Quant-Q is a quantitative reasoning (math) exam that aligns with FCPS Policy that TJHSST serve "students with exceptional quantitative skills and interest in science, technology, engineering, or mathematics." The ACT Aspire Science test allowed the admissions process, for the first time, to include an assessment of science skills. Inclusion of this test provided students with another opportunity to share their STEM skills. The ACT Aspire Reading section was included as a general

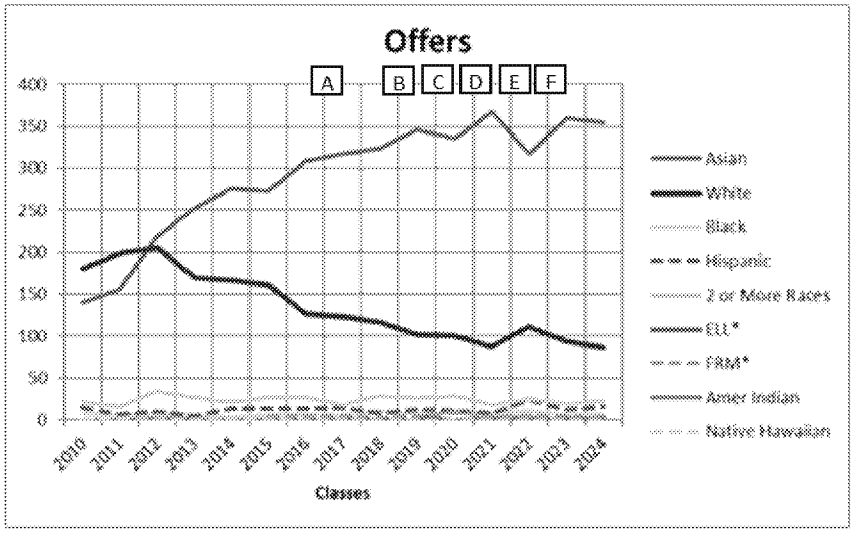
measure of verbal ability. Within the admissions process, the new exams changed the sliding scale or minimum requirements to become a semifinalist, shifting to the use of national percentile ranks as determiners.

As shown in Figure 1, despite actions aimed at increasing diversity among students offered admissions to TJHSST, the past 15 years have seen a steady failure to improve ethnic, racial, and socio-economic diversity The figure also shows low numbers of students who are economically disadvantaged (FRM) or English learner students (ELL) throughout this period. Furthermore, the changes identified in Table 2, which are marked in the figure using the same letters as in Table 2, made no discernible improvement in the diversity of TJHSST's student membership. Thus, while FCPS has aimed to improve the diversity of students attending TJHSST for many years, none of the actions it has implemented to accomplish that aim have helped.

**Figure 1: Demographics of TJHSST Applicants, Semi-Finalists and Offers, Class of 2010 to 2024 (SY 2005-06 to 2019-20)**




*All figures depict FCPS students only for the ELL and FRM student groups

## Comparison of Diversity at TJHSST to Other Selective High Schools

The lack of diversity in TJHSST's students is not unique to the school but is shared by many schools with selective admissions processes, including STEM schools.[6] As shown in Table 3, many of these schools also lack race, ethnicity, economically disadvantaged (FRM), and gender diversity. For example, the three New York STEM schools in Table 3 (Brooklyn Technical High School, Bronx High School of Science, Stuyvesant High School) draw from a student population that is 26 percent Black and 41 percent Hispanic, yet enroll students that range from 1 to 6 percent Black and 3 to 7 percent Hispanic representation.

**Table 3: Comparison of Demographics in Student Membership at TJHSST and Other STEM Schools**

| School | Location | % Asian | % Black | % Hispanic | % White | % FRM | % Female |
|---|---|---|---|---|---|---|---|
| TJHSST | Alexandria, VA | 68 | 2 | 2 | 21 | 2 | 40 |
| Bergen County Academies | Hackensack, NJ | 51 | 1 | 8 | 35 | 5 | 53 |
| Biotechnology High | Freehold, NJ | 49 | 1 | 2 | 48 | 2 | 50 |
| Brooklyn Technical High School | Brooklyn, NY | 60 | 6 | 7 | 23 | 62 | 40 |
| Bronx High School of Science | Bronx, NY | 65 | 3 | 6 | 23 | 46 | 41 |
| High Technology High | Lincroft, NJ | 53 | 2 | 2 | 40 | 2 | 35 |
| Illinois Math and Science Academy | Aurora, IL | 42 | 8 | 9 | 35 | 0 | 50 |
| Louisiana School for Math, Science, and the Arts | Natchitoches, IL | 11 | 13 | 4 | 68 | 19 | 60 |
| Oxford Academy | Cypress, CA | 69 | 1 | 18 | 7 | 39 | 53 |
| School of Science and Engineering | Dallas, TX | 13 | 10 | 59 | 14 | 61 | 33 |
| SC Governor's School for Science and Math | Hartsville, SC | 16 | 12 | 1 | 67 | na | 50 |
| Stuyvesant High School | New York, NY | 73 | 1 | 3 | 19 | 46 | 43 |
| Union County Magnet High School | Scotch Plains, NJ | 35 | 9 | 15 | 38 | 9 | 43 |
| University Laboratory High School | Urbana IL | 26 | 5 | 5 | 63 | na | na |
| Whitney High School | Cerritos, CA | 76 | 2 | 15 | 4 | 24 | 58 |

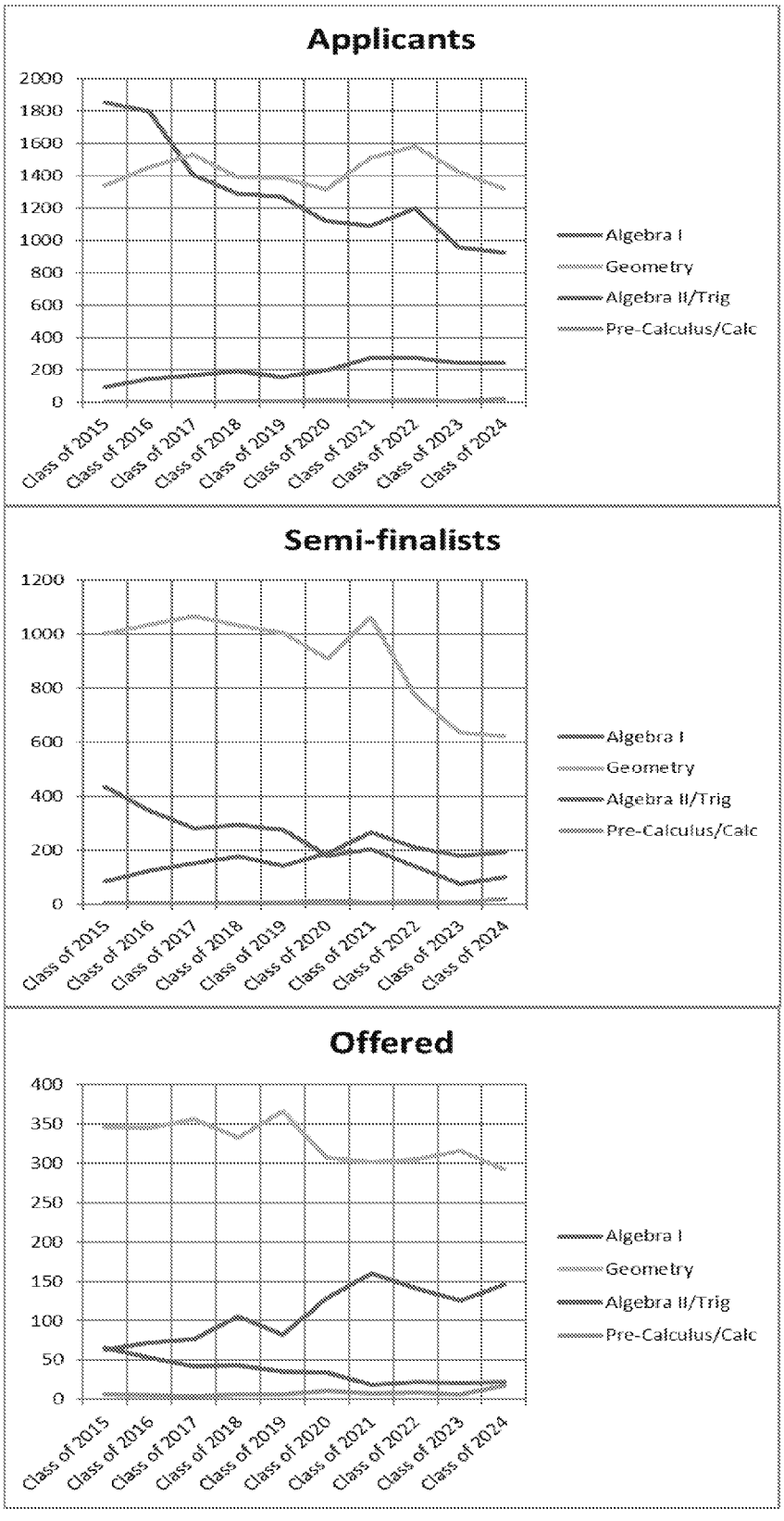
Note: Demographic information was unavailable for the Gatton Academy of Math and Science, North Carolina School of Science and Math, Oklahoma School of Science and Math.

[6] Reeves, R. V. & Schobert, A. (2019). *Elite or elitist? Lessons for colleges from selective high schools.* Brookings Institute. Washington DC: Brookings Institute.

## Pipelines and Impact on Diversity

Another important factor to consider in the diversity of admissions to TJHSST is the diversity of students who are on the typical track to be prepared for, applying to and, ultimately, accepting offers to the school. In keeping with the School Board's Policy 3355.4, students admitted to the school are not typical eighth graders with respect to their mathematics course-taking but rather are intended to "have demonstrated exceptional achievement, aptitude, commitment, intellectual curiosity, passion, and creativity in science, technology, engineering, and mathematics." As shown in Figure 2, most students who are admitted to TJ have already completed Geometry (the second high school level course in the mathematics sequence) or a higher-level mathematics class by the end of eighth grade. In fact, while a decade ago over 50 students a year were admitted to TJHSST having taken only the first high school level course, Algebra I, this has fallen steadily to approximately 20 students a year over the last several years. Admission of students taking Geometry has also declined. As this has happened, the number of students admitted to TJ having taken Algebra II (the third high school course in the sequence) in eighth grade has steadily increased from slightly under 100 a year to approximately 200 a year. Fewer students enrolled in Algebra I receive an offer than those enrolled in subsequent, higher level high school mathematics courses while still in middle school. And, increasingly, enrollment in Algebra II is strongly associated with receiving an admission offer.

**Figure 2: Eighth Grade Math Course of Students Offered Admission to TJHSST, Class of 2015 to 2024 (SY 2011-12 to 2019-20)**



A deeper review of students enrolled in each of these mathematics courses provides greater understanding of the demographics of students applying to TJHSST. While FCPS is a highly diverse school division, without a majority racial/ethnic group (White: 38 percent; Hispanic: 27 percent, Asian: 20 percent, Black: 10 percent; Multi-racial or other race ethnicity: 6 percent), there is greater homogeneity in the demographics of students enrolled in higher-level mathematics courses during middle school. As seen in Table 3, during SY 2019-20, Asian and White students were primarily enrolled in Algebra I, meeting the minimum math course requirement to apply to TJHSST. In contrast, Black and Hispanic students were largely enrolled in Pre-Algebra, a course that does not meet the admissions requirement that applicants be enrolled in Algebra I or higher.

**Table 3: SY 2019-20 Eighth Grade Students' Mathematics Courses by Race/Ethnicity**

| | Pre-Algebra | | Algebra I | | Geometry | | Algebra II | |
|---|---|---|---|---|---|---|---|---|
| 2020 | # of Students | Percent | # of Students | Percent | # of Students | Percent | # of Students | Percent |
| Asian | 527 | 9.7% | 1442 | 23.2% | 767 | 47.3% | 132 | 84.62% |
| Black | 835 | 15.4% | 594 | 9.5% | 58 | 3.6% | 1 | 0.64% |
| Hispanic | 2493 | 46.1% | 1128 | 18.1% | 120 | 7.4% | 4 | 2.56% |
| White | 1551 | 28.7% | 3063 | 49.2% | 677 | 41.7% | 19 | 12.18% |
| Total | 5406 | | 6227 | | 1622 | | 156 | |

Furthermore, Black and Hispanic students represent increasingly smaller percentages of eighth graders taking a high school course (Algebra I, Geometry, and Algebra II) as you move through the high school sequence. This pattern is reflective of the TJHSST admissions data for historically underrepresented students: Black and Hispanic students have been underrepresented in eighth grade Geometry and Algebra II classes and as applicants to TJHSST. To be enrolled in these two classes as an eighth grader, a student must take Algebra I by seventh grade at the latest. As described in FCPS' Office of Research and Strategic Improvement's (ORSI; formerly the Office of Program Evaluation) 2014 final evaluation report on the Division's mathematics program, "participation in advanced math during elementary school is a 'gateway' to enriched and accelerated curriculum in middle and high school." While FCPS students can move into Algebra I in eight grade without acceleration, admitted TJHSST students primarily come from eighth grade Geometry and Algebra II courses that require acceleration in elementary school. And, as found in the ORSI study, students are not being equitably provided access to this early acceleration. Ultimately, the limited diversity in the pipeline at elementary school leads to limited diversity in the students applying to TJHSST.

## Choice to Apply and Impact on Diversity

In addition to the smaller numbers and percentages of Black and Hispanic eighth graders enrolled in the math courses, most associated with admission to TJHSST (i.e., Geometry, Algebra II, and beyond), FCPS data indicates that Black and Hispanic students (as well as White students) in these upper level classes are also less likely to choose to apply to TJHSST. In fact, as shown in Table 4, during the most recent admissions year (SY 2019-20), only 22 of 58 Black students (38 percent) and 42 of 120 Hispanic students (35 percent) taking geometry chose to apply to TJHSST. In comparison, over 60 percent of Asian students chose to apply. Thus, while a majority of Asian students in Geometry opted to apply for admission to TJHSST, a majority of Black and Hispanic (and White) students enrolled in the same course during eighth grade chose not to apply for admissions. A 2003 study by ORSI (then the Office of Program Evaluation) found similar percentages of high-performing students applying for admission to TJHSST within each racial/ethnic group. The 2003 study also reported that middle school counselors identified lack of interest in the focus of TJHSST; not wanting to deal with the pressure inherent at a school like TJHSST; and the appeal of students' base schools, for both

academics and extracurricular activities, as reasons for not applying to TJHSST. Whether the concerns identified over 15 years ago remain the primary reasons behind the choices made by FCPS' current students on whether to apply to TJHSST are not known but do offer potential insight into why students might choose not to apply. However, what is apparent, regardless of the reason for not applying, is that the disparity in the percentages of students from different race/ethnic groups who choose to apply further constrains the diversity in the applicant and admitted pool of students. Stated another way, the choice not to apply is further limiting the potential for greater diversity at TJHSST.

**Table 4: Percentages by Race/Ethnicity of Eighth Graders Enrolled in Geometry Opting to Apply to TJHSST, SY 2018-19 to 2019-20**

| Geometry Applied | 2020 | | 2019 | | 2018 | |
|---|---|---|---|---|---|---|
| | # of Students | Percent | # of Students | Percent | # of Students | Percent |
| Asian | 492 | 64% | 468 | 63% | 546 | 57% |
| Black | 22 | 38% | 29 | 45% | 42 | 51% |
| Hispanic | 42 | 35% | 33 | 35% | 53 | 47% |
| White | 196 | 29% | 207 | 29% | 241 | 32% |

## Research and Data on Potential Remedies

### Approaches to Improving Diversity in Selective Admissions

Almost two decades ago, the FCPS School Board passed a resolution directing the Superintendent to convene a 12-member Blue Ribbon Commission (BRC) to recommend improvements to the TJHSST admissions process. Comprising experts with expertise in selective admissions at the high school and higher education levels, as well as well as experts in science and engineering education and in education policy, the panel was charged with providing recommendations that would allow the school "to achieve diversity without diminution of the high standards for admission to or success at TJHSST."[7] The BRC voiced its belief that greater diversity could be achieved without diminution of high admission standards. Subsequent to the report's release, FCPS implemented many of the recommendations in the BRC report in some form, especially those focused on the selection process, such as reducing the influence of the test score in determining semi-finalists and removing the limit on the size of the semifinalist pool. Nonetheless, the three percent of Black and Hispanic students admitted to TJHSST last school year (SY 2019-20) exactly matches the demographics of Black and Hispanic students (totaling three percent) at the time that the commission's report was released.

This background on the BRC recommendations is introduced not to indicate that attaining greater student diversity at TJHSST is an impossible task but rather to acknowledge the difficulty of doing so and the potential need to employ innovative approaches to the admissions process to achieve this aim. As already mentioned, the lack of diversity at TJHSST is similar to that of other schools with specialized admissions processes. Similarly, the pipeline issue (i.e., underrepresentation of Black and Hispanic students in opportunities for accelerated mathematics prior to applying to TJHSST) is also not unique to FCPS. Thus, researchers and experts have attempted to understand and address potential remedies not just for TJHSST but at other schools toward the aim of improving diversity without diminution of academic standards.

[7] Blue Ribbon Commission Members (2004). *Fairfax County School Board Blue Ribbon Commission on Admissions: The Thomas Jefferson High School for Science and Technology*. Fairfax, VA: Fairfax County Public Schools.

While many potential ways have been recommended for improving the diversity of students in these schools, no institution has found a highly successful way to address the two-fold aims expressed in the FCPS School Board's original charge to the BRC: making the demographics of the school's student body more diverse while also upholding the school's rigorous learning environment. Admissions to selective schools generally rely upon some type of test, but also frequently include consideration of grade point average (GPA), essay, interview, recommendations (teacher, peer, etc.), attendance, and adversity factors, such as low socio-economic status.[8] Thus, FCPS' most recently used approach to TJHSST admissions falls squarely in the middle of approaches used in similarly selective admissions processes. Approaches that rely on fewer data points, such as New York City's reliance on a single exam score and Boston's reliance on a test score and GPA for admission into those districts' selective schools, are related to the lowest levels of diversity.[9]

In contrast, approaches that intentionally set out to be representative of factors such as geography or socio-economic status have been shown to be better at admitting more diverse students. For example, a study undertaken by the Brookings Institute found that Chicago Public Schools, which uses socioeconomic status as a major component in its admissions process, has a smaller gap between the demographics of the district and the demographics of students admitted to its selective high schools. Chicago has accomplished this using socioeconomic tiers to group students for admissions and, after admitting 30 percent of top-scoring applicants regardless of tier, dividing the remaining available slots equally among the tiers. Echoing the FCPS School Board's charge to the BRC, Richard Kahlenberg, a national leader in student diversity in public schools and one of the experts who helped Chicago develop its approach, has indicated that the process guards excellence while promoting diversity. Chicago Public Schools also employs principal discretion as part of its admissions process, allowing principals to admit up to five percent of students to each of its selective schools based on factors beyond those considered in the main admissions process (e.g., honors and awards, recommendations, personal statements).

Additionally, leveling the playing field with respect to socioeconomic factors is a critical lens through which to view admissions requirements. For example, FCPS is well aware that some applicants to TJHSST have participated in extensive paid-for tutoring and training that support higher performance on TJHSST's admissions components. Other ways in which financial constraints may promote greater homogeneity is through application fees. For this reason, the BRC recommended in 2004 that FCPS increase communication about the availability of waivers for the application fee. Additionally, admissions processes need to be careful to guard against inadvertently providing advantages to students with greater financial resources, such as through participation in extracurricular activities that support interest, passion, and knowledge about STEM. Not only decreasing the influence of such financial influences on selective admissions but also extending free or low-cost opportunities to similar activities for students with lower financial resources are important to feeding the pipeline of highly qualified, passionate, and diverse students.

### Lottery Approaches to Selective Admissions

As described above, the most common approaches to selective admissions into public schools involve multiple data points about each applicant. Use of rating criteria for these data points are intended to ensure the best match of a school's offerings to a student. However, in situations where there are more students

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[8] Finn, C., & Hockett, J. (2012). *Exam Schools: Inside America's Most Selective Public High Schools*. Princeton; Oxford: Princeton University Press. doi:10.2307/j.cttq959p; Reeves, R. V. & Schobert, A. (2019). *Elite or elitist? Lessons for colleges from selective high schools*. Brookings Institute. Washington DC: Brookings Institute.

[9] Reeves, R. V. & Schobert, A. (2019). *Elite or elitist? Lessons for colleges from selective high schools*. Brookings Institute. Washington DC: Brookings Institute.

that are a good match to a school's offerings than slots, lotteries may be used. For example, lotteries are common at magnet and charter schools where admissions slots cannot accommodate all qualified and interested students, including in FCPS. While not common as an admissions approach at specialized schools, some do rely upon a lottery approach to select all or most of their students. For example, in Georgia, the Gwinnett School of Mathematics, Science and Technology admits all its students through a lottery. Gwinnett's selection process results in approximately 32 percent of admitted students being Black or Hispanic (in a school district that is approximately 55 percent Black and Hispanic).

### Building Pipelines

This paper has already covered the issue of pipelines in FCPS as students ascend grade levels and become eighth graders eligible to apply to TJHSST. While not a short-term solution, development of pipelines that might expand diversity, wherein younger underrepresented students are targeted to receive STEM opportunities and encouraged to develop passion for STEM, are often described as the best way to approach a long-term solution to the diversity issues plaguing TJHSST and other STEM schools. The BRC devoted a whole section of their report on recommendations about public communication and outreach, largely targeted at improving the information and opportunities underrepresented students have to participate in STEM activities at the lower grades. While research on these pipelines has largely focused on public school experiences that set the ground work for majoring in STEM once students attend college or university, there is no reason to believe that similar encouragement and opportunities at younger ages would not have a similar outcome on STEM interest at the high school level.

## Final Proposals for the TJHSST Admissions Process

The FCPS School Board has already voted to accept several changes to the Class of 2025 (SY 2020-21) TJHSST admissions process, which are reflected in the recommended proposals below. These changes include removal of the $100 fee for all applicants, elimination of the TJHSST admissions testing, and discontinuation of the teacher recommendations from the process. All of these changes are intended to remove potential barriers for historically underrepresented student groups and may lead to some positive impact on diversity of the admitted class. Specifically, the elimination of the fee removes a financial barrier that may have prevented some students from seeking admission (even with the possibility of a fee waiver). Elimination of the TJHSST admissions tests removes one of the semi-finalist criteria that many underrepresented students were unable to overcome to continue in the admissions process. Lastly, discontinuation of the use of teacher recommendations removes the subjectivity that may have worked against underrepresented applicants. Additionally, the FCPS School Board has requested expansion of the incoming class at TJ from approximately 480 students to approximately 550 students. The larger classes will more closely align to the enrollment capacity of the recently renovated TJHSST building. Perhaps more importantly, increasing the class size will allow more students to benefit from the specialized opportunities available at the school.

Within the new guidelines established by the FCPS School Board and minding the information previously presented in this paper, FCPS offers two final proposals on approaches to this year's TJHSST admissions process. Development of these proposals follows an extended period of analysis and careful consideration by district- and school-level leaders, as well as consultation with external experts on selective admissions. FCPS proposes to adopt certain revisions to the qualification requirements and admissions process for the TJHSST Class of 2025 (SY 2020-21 admissions cycle), who will begin ninth grade in the 2021-22 school year.

Table 5 describes the admissions components for each proposal, in brief, and compares them to the most recently administered admissions process (SY 2019-20). The first proposal represents a holistic review of candidates that is more similar to the process used to-date, including last year. The second proposal

represents a greater departure from the process used to-date and is considered more likely to result in greater diversity in students admitted to TJHSST as it represents a hybrid approach that takes some students through a holistic review and others through a lottery of highly qualified applicants. External experts consulted by FCPS about incorporating a lottery into the TJHSST admissions process indicated their belief that the this would likely support increased diversity among entering TJHSST classes.

**Table 5: Comparison of SY 2019-20 and Proposed Admissions Processes (differences in italics; new components in bold)**

| **Stage** | **SY 2019-20 Holistic Review** (top 480 students admitted) | **Revised Holistic Review** (top 550 students selected for admission) | **Hybrid Holistic Review and Merit Lottery** (top 100 students selected and remaining 450 students selected via lottery) |
|---|---|---|---|
| Applicant | • Satisfy residency requirements<br>• *3.0 GPA* in core academic classes<br>• Enrolled in Algebra I or have a credit for Algebra I<br>• *Pay $100 fee or receive fee waiver* | • Satisfy residency requirements<br>• ***3.5 GPA*** in core academic classes<br>• Enrolled in Algebra I or have a credit for Algebra I<br>• ***Enrolled in both math and science honors courses***<br>• ***Enrolled in one additional honors course or identified as a Young Scholar*** | • Satisfy residency requirements<br>• ***3.5 GPA*** in core academic classes<br>• Enrolled in Algebra I or have a credit for Algebra I<br>• ***Enrolled in both math and science honors courses***<br>• ***Enrolled in one additional honors course or identified as a Young Scholar*** |
| Semi-Finalist | • *Achieve sufficient scores on exams (Quant-Q, ACT Aspire Reading, ACT Aspire Science)* | *NA* | *NA* |
| Decision | • GPA<br>• *Scores on exams (Quant-Q, ACT Aspire Reading, ACT Aspire Science)*<br>• *Two Teacher Recommendations*<br>• *Student Information Sheet (SIS) responses*<br>• Problem-solving Essay response | • GPA<br>• ***Student Portrait Sheet (SPS) responses***<br>• Problem-solving Essay response<br>• ***Experience Factors*** | • GPA<br>• ***Student Portrait Sheet (SPS) responses***<br>• Problem-solving Essay response<br>• ***Experience Factors*** |

As shown in the Table 5, the components in the admissions process used within the two proposals are identical. Both proposals increase the GPA required of applicants from 3.0 to 3.5 in core academic classes. Further, both require enrollment in math and science honors classes, as well as either enrollment in an additional honors class or identification as a Young Scholar. The requirements for enrollment in honors classes and/or identification as a Young Scholar would be new. The two remaining components are similar to the prior process, namely enrollment in Algebra I or having a credit (i.e., successfully completed) Algebra I previously and satisfaction of residency requirements. Both proposals also remove the semifinalist stage, which was previously determined based upon performance on the now eliminated admissions testing. In both proposals, decisions will now include consideration of GPA, responses to a Student Portrait Sheet, which updates the prior SIS content toward FCPS' Portrait of a Graduate attributes, response to a problem-solving essay, and experience factors, all of which will be quantified. The previous inclusion of test scores and teacher recommendations in making admissions decisions have also been removed from both proposals. Additional details on these admissions criteria are provided in Table 6.

**Table 6: Admissions Components to be Used for the Class of 2025 (SY 2020-21)**

| Component | Description |
|---|---|
| Applicant Requirements – *applicants must meet all of the listed requirements* | |
| Satisfy residency requirements | Student must reside in Fairfax County or one of the participating Virginia school divisions |
| 3.5 GPA in core academic classes | Includes final 7th grade marks and current 8th grade marks. Students in above grade level classes or honors/AP/IB level classes do not receive additional weight in the GPA computation |
| Enrolled in Algebra I or have a credit for Algebra I | Reflects students taking high school level mathematics while still in middle school. Credit for Algebra I means students have previously completed this course successfully and are enrolled in a higher level high school mathematics course during 8th grade |
| Enrolled in both math and science honors courses | Reflects the rigor of the student's preparation in mathematics and science |
| Enrolled in one additional honors course or identified as a Young Scholar | Reflects pursuit of academic excellence |
| Evaluative Components – *these components are used in the holistic review of applicants* | |
| GPA in core academic classes | Allows applicants to demonstrate their academic record |
| Student Portrait Sheet (SPS) responses | The Student Portrait Sheet is an enhanced version of the SIS that allows applicants to demonstrate their competence in the elements of Portrait of a Graduate and 21st Century Skills |
| Problem-solving Essay response | The essay is designed to allow applicants to demonstrate their problem-solving skills by describing their approach to solving a multi-variable math or science question |
| Experience Factors | Quantifies factors that may have an impact on a student's educational experience, including:<br>○ Economically Disadvantaged student<br>○ English learner student<br>○ Student identified for special education services<br>○ Student attends an underrepresented schools |

The experience factors are an entirely new component being added to the holistic review process. Talented students enrolled in each FCPS middle school have traits important to the mission and goals of TJHSST and could contribute to the school's learning. These changes more directly account for the fact that many students who want to enroll in a specialized school focused on math and science and who could be successful at TJHSST may have different academic, extracurricular, and personal experiences and differing arrays of strengths and interests. Experience factors will allow consideration of contexts that require a student to demonstrate grit and persevere through challenges to meet the TJHSST applicant requirements. Such students are likely to support a diversity of perspectives among students entering the school each year, thus, contributing to the improved problem solving and critical thinking that diversity has been shown to bring to the higher education level.

Schools considered underrepresented within each school division will be identified based on their having had fewer students admitted into TJHSST over the last five years than the maximum number within that division, minus three times the standard deviation within the division. For example, in FCPS the maximum number of students averaged across the five years was 44 students within a school, with a standard deviation across FCPS middle schools of 13. Therefore, schools with an average of 5 or fewer admitted students (44 – (3x13)) across the last five years were identified as underrepresented, yielding 10 middle

schools (Glasgow*,Holmes, Hughes*, Key, Poe, Sandburg*, South County*, Stone, Twain*, Whitman; asterisk indicates AAP center school). This same approach will be applied to other sending school divisions to identify underrepresented schools in all participating jurisdictions (Falls Church City schools, with only one middle school, and private schools will not be identified as underrepresented). Underrepresented schools will be identified each year based on the last five years of admissions data.

The revised qualification requirements and admissions processes captured by the two proposals should allow TJHSST to identify students who are interested in math and science and who have demonstrated a pattern of high achievement, while improving upon fair and equitable access to students who have the potential to succeed at TJHSST. FCPS expects that as a result of the changes, the student population at TJHSST may reflect, more closely, the diverse population in the jurisdictions from which students are eligible to apply for admission.

### Pathways

Both proposals also rely upon region and school division pathways for admittance to TJHSST. The pathways have been designed to ensure equitable access for students across all regions in FCPS and participating jurisdictions. Regional pathways for participating jurisdictions reflect the historical split between Fairfax and all other jurisdictions combined: 70 percent of students will be selected from FCPS and 30 percent of students will be selected from the all other participating school divisions combined. Within FCPS, pathways were designed to ensure that students offered admission to TJHSST represent equitable regional distribution. Each region is allotted proportional representation. A school- or pyramid-level pathway approach was not employed because it would disadvantage schools that traditionally admit large numbers of students. See Appendix A for admissions caps if a school pathway were used instead.

While the components in the two proposals are largely identical, the process in which they would be used differs, as captured below. FCPS expects that the revised holistic approach, which is more similar to the current approach is likely to result in less improvement in student diversity than the hybrid approach, even with the planned changes.

### Revised Holistic Approach

#### Admissions Process

The revised holistic review more closely resembles the most recently used admissions approach than the hybrid proposal. It would offer admission to 550 eighth graders who satisfied applicant requirements and received high evaluation ratings combined across the four evaluative components (GPA, SPS responses, essay response, experience factors). Students would be admitted based on the region (Fairfax County) or school division (other participating divisions) in which they reside with caps on the number admitted from each. Estimated caps are provided in Table 7.

**Table 7: Estimated Revised Holistic Caps for Regions and Other Participating Virginia School Divisions**

| FCPS Regions (in addition to the top 100 students) | |
|---|---|
| **385 Seats** | |
| Region 1 | 81 |
| Region 2 | 85 |
| Region 3 | 73 |
| Region 4 | 79 |
| Region 5 | 67 |

| Participating Virginia School Divisions (in addition to the top 100 students) | |
|---|---|
| **165 Seats** | |
| Arlington | 20 |
| Falls Church | 2 |
| Loudoun | 67 |
| Prince William | 76 |

### Rolling Admissions

The TJHSST application process has traditionally included a rolling admissions provision. This provision is designed to ensure that the Freshman class has as many students as possible on the first day of school, should students withdraw from the process. For the Revised Holistic Review be used to admit the Class of 2025, the following steps would guide rolling admissions:

- Students offered admissions within pathways, with each pathway maintaining a list of students not selected
- Admitted students have designated timeframe to accept or reject the admissions offer
- Openings filled by the next eligible (most highly rated) applicant on the pathway list
- Should an FCPS pathway exhaust its list of students, the next eligible (most highly rated) FCPS candidate across all other region pathways would be offered admission
- Should a non-FCPS pathway exhaust its list of students, the next eligible (most highly rated) candidate across all other non-FCPS pathways would be offered admission
- Should all non-FCPS pathways exhaust their lists of students, the next eligible (most highly rated) FCPS candidate across all other region pathways would be offered admission.

### Hybrid Approach (Holistic and Merit Lottery)

#### Admissions Process

The hybrid approach, which includes both holistic review and a merit lottery, is a greater departure from prior admissions processes than the revised holistic approach described above. The hybrid approach would offer admission to 100 eighth graders who satisfied applicant requirements and received the highest evaluation ratings combined across the four evaluative components (GPA, SPS responses, essay response, experience factors). The remaining 450 spots in the class would be filled based on a lottery of students scoring above average on the evaluative components, demonstrating the high levels achievement needed to be successful at TJHSST. FCPS estimates that approximately half the remaining students would be included

in the merit lottery. Lottery selection would be tiered within regions (Fairfax County) or school division (other participating divisions) in which they reside.

Caps on the number of students from each region or school division who are admitted through the lottery are presented in Table 8; in comparison to Table 7, these caps total 450 rather than 550, since 100 students will be admitted based on obtaining the highest ratings in the holistic review.

**Table 8: Estimated Lottery Caps for Regions and Other Participating Virginia School Divisions**

| **FCPS Regions (in addition to the top 100 students)** | |
|---|---|
| **315 Seats** | |
| Region 1 | 66 |
| Region 2 | 69 |
| Region 3 | 60 |
| Region 4 | 65 |
| Region 5 | 55 |

| **Participating Virginia School Divisions (in addition to the top 100 students)** | |
|---|---|
| **135 Seats** | |
| Arlington | 16 |
| Falls Church | 2 |
| Loudoun | 55 |
| Prince William | 62 |

A hybrid approach would ensure that those rated as mostly highly matched to the specialized opportunities provided at TJHSST are able to attend, while also ensuring that the many other students who are highly-matched to the school's mission and poised to benefit from the TJHSST experience all have an equal chance of being admitted. Admissions would follow the following process:

- All applicants receive a holistic review of their application, including GPA, Student Portrait Sheet, problem-solving essay, and experience factors.
- The 100 highest-evaluated students will be offered admission to TJHSST. This represents slightly less than 20% of all applicants.
- The remaining 450 students will be selected by a random lottery among highly-evaluated applicants within their region or school division pathway.
- Pathway caps will not be applied to the 100 highest-evaluated students. FCPS will be allocated a total of 315 lottery seats; the remaining 135 seats will be proportionally allocated via lottery to the other participating school divisions (Arlington, Falls Church, Loudoun, Prince William).

### Rolling Admissions

The Hybrid Approach would also incorporate a rolling admissions approach to ensure the Freshman class has as many students as possible on the first day of school.

  - Students offered admissions within pathways, with each pathway maintaining a list of students not selected

- Admitted students have designated timeframe to accept or reject the admissions offer
- Openings filled by the next eligible (highest lottery rank) applicant on the pathway list
- Should an FCPS pathway exhaust its list of students, the next eligible (highest lottery rank) FCPS candidate across all other region pathways would be offered admission.
- Should a non-FCPS pathway exhaust its list of students, the next eligible (highest lottery rank) candidate across all other non-FCPS pathways would be offered admission.
- Should all non-FCPS pathways exhaust their lists of students, the next eligible (highest lottery rank) FCPS candidate across all other region pathways would be offered admission.

### Modeling Attainable Improvement in Diversity through the Hybrid Approach

FCPS' Office of Research and Strategic Improvement modeled the lottery process for FCPS students based on current eighth graders, running the model 1,000 times. Selecting all eighth graders throughout FCPS who met the applicant requirements (*n*=4,357), resulted in estimates of the potential demographic results shown in Table 9 for the Class of 2025 admitted to TJHSST should the hybrid approach be used. Readers should keep in mind that the modeling assumed that all students meeting applicant requirements would be chose to apply and, ultimately, be included in the pool of highly-evaluated applicants, which is unlikely. Nonetheless, this group does represent the most likely pool from which the lottery would draw so is the best estimate of what would occur. See Appendix B for additional information on the modeling, including student group counts and percentages by region.

**Table 9: Demographic Make-up of FCPS Students in the TJHSST Class of 2025, based on Modeling the Hybrid Lottery[10]**

| Student Group | Number of Students Meeting Applicant Requirements | Average. Percent of Admitted Class[11] | Minimum Percent of Admitted Class | Maximum Percent of Admitted Class | Average Number of Admitted Students |
|---|---|---|---|---|---|
| Asian | 1,425 | 31% | 23% | 38% | 121 |
| Black | 270 | 7% | 3% | 11% | 27 |
| Hispanic | 439 | 11% | 6% | 15% | 42 |
| White | 1,895 | 44% | 35% | 51% | 168 |
| English Learners | 3 | 0% | 0% | 1% | 0 |
| Economically Disadvantaged | 510 | 12% | 8% | 18% | 48 |
| Students with Disabilities | 91 | 2% | 0% | 4% | 8 |

## Stakeholder Engagement

To attain improvements in the diversity of TJHSST students, work will need to include persuading more of our high achieving students from underrepresented groups, such as those taking Geometry in the eighth

[10] The models described in this table represent admitting a total of 385 FCPS students, which reflects 70 percent of a 550 student class.
[11] The standard deviations for each student group are as follows: Asian =2%, Black = 1%, Hispanic=2%, White=3%, Other=1%, EL=0%, FRM=2%, S504=1%, SWD=1%

grade, to choose to apply to and later accept admissions offers to TJHSST. Doing so may involve work to change parental and student perceptions of TJHSST, address concerns about leaving a base school, or other factors not yet understood. Additionally, it may require TJHSST to more fully express its embrace of currently underrepresented students. Toward these aims, FCPS and TJHSST will continue to work with parents, students, and middle schools in participating school divisions to provide information on the admissions process and to ensure that all middle school students who have the potential to be successful at TJHSST and who are interested in math, science, and technology have the same opportunity to access the specialized program at TJHSST. As described above, it is critical for qualified students to be aware of the opportunities provided at TJHSST. Additionally, parents, students and middle schools need to be informed about the admissions process and procedures, along with continued work in providing resources and information regarding important deadlines and application requirements for students to all groups. These resources will be made available in multiple environments along with translated versions. Engagement with parents, student and elementary schools is important for long range planning. It is critical to provide similar resources for long term planning. This allows for greater understanding of the necessary steps needed to consider TJHSST as a high school option, further opening the pipeline to a greater number of students.

TJHSST Admissions conducts outreach initiatives to a wide range of students and will continue to do so. Outreach initiatives are designed to provide students with information about TJHSST as a high school option and to describe its unique STEM experiences. The Office of Admissions provides enrichment activities to students from underrepresented schools such as STEM field trips, after-school and summer enrichment programming, family engagement activities and newsletters. The short-term goal is to provide information about TJHSST as a high school option and to increase student interest and applications to TJHSST. Another short-term goal is to attract economically disadvantaged students by expanding outreach in Title I schools. The long-term goals are to encourage underrepresented students to consider TJHSST as a viable option for their high school experience and to provide extra opportunities for math and science exploration.

### Communication with Stakeholders

To support the revised admissions process and encourage diversity, there are multiple messages that will be highlighted in communications with stakeholders:

*Continue to "provide students with a challenging learning environment focused on math, science, and technology," consistent with the school's mission*

- All students who attend TJHSST will to receive the same rigorous classroom instruction and the same opportunities to participate in varied and enriching extracurricular activities.

*Continue to be supported by evidence and best practices*

- The Office of TJHSST Admissions, in partnership with other FCPS departments and offices, will continue to review the research on and current practices of other magnet schools.

*Continue to be fair and equitable, and administered consistently with applicable law*

- Admissions decisions will be based on an individualized assessment of each applicant's qualifications. No individual who is otherwise eligible based on residency and satisfaction of minimum academic requirements will be denied an opportunity to apply for admission to TJHSST based on a particular characteristic, nor will any individual be guaranteed admission. There will be no limits to the number of individual students sharing particular characteristics who can be accepted under the revised process.

*Continue to promote diversity in many forms.*

- FCPS will regularly review its metrics of performance regarding student and staff diversity, along with the climate and engagement of students and staff.

*Continue to select students for admission only if they demonstrate evidence of readiness for TJHSST's academic rigor and an ability to contribute to the learning environment at TJHSST.*

- Every year, many more students who are interested in math and science and who could be successful at TJHSST apply for admission than can be accepted; the revised process would offer prospective students' admission through this new pathway.

*Continue to engage parents/families, community stakeholders, local businesses and government, etc. to identify potential outreach opportunities.*

- Admissions Office will continue to support a broad-based plan of engaging students and families through a variety of enrichment programming.

## Caring Culture Supports for Students

The principal and staff at TJHSST have several initiatives underway to ensure that all students feel supported and welcomed at school. Transition resources for students include both academic supports and social emotional supports. The school provides summer enrichment courses, organizational and study skills support, advisory groups, and 8th period tutoring to ensure that all students are prepared to excel. Social emotional supports include student mentors, teacher advisory committees, lessons on social-emotional learning, and eighth-period clubs which allow students to explore passions not in the curriculum. There is a schoolwide emphasis for all students, particularly grades 10-12, regarding accepting and celebrating all students at TJHSST.

Wrap-around supports for students have been a focus of the administration. School Improvement and Innovation Plan (SIIP) goals have been built to ensure that each student has a trusted adult in the school, that student advocacy is embraced, that students have the proper skills to manage the school's workload and expectations, and that staff employ equitable practices to support diversity. Students and parents are regularly contacted by counselors. The TJ Mental Wellness Coalition, a student led committee, provides peer-to-peer support. Both students and staff are engaged with Challenge Success, an organization that partners with schools, families, and communities to embrace a broad definition of success and to implement research-based strategies that promote student well-being and engagement with learning. Staff employ Multi-tiered Systems of Support (MTSS) and receive continued professional development on cultural responsiveness to ensure that students are fairly treated.

## Accountability Metrics

Metrics have been established to measure the success of the selected approach. The goal is to improve diversity at TJHSST so that the students can reap the benefits that such differing perspectives and experiences might bring to the STEM efforts at the school. Metrics have been established to ensure that

diversity does increase, outreach efforts are successful, and that students and families at TJHSST experience a caring culture once admitted.

- Percent diversity of students (race / ethnicity, socioeconomic status, English learner status, gender)
- Percent of middle school students who believe that they belong at TJHSST
- Number of families who attend TJHSST outreach meetings
- Percent of students who feel respected and included at TJHSST
- Percent of parents who feel respected at TJHSST

The second and third metrics are newly developed. Data collection methods will need to be established to provide baseline data. Student Climate and Family Engagement Survey data can be used to establish baselines and targets for the second two metrics. This metric data will be made public once a year. Additionally, the TJHSST Admissions Office plans to provide the admissions data to the FCPS School Board and public annually, once the admissions process has concluded. As in the past, public release of admissions data will be handled via an annual news release, which will include but may not be limited to counts and percentages of applicants and offered students disaggregated for FCPS and other participating jurisdictions, public vs. private school, gender, and race/ ethnicity. School level data will be provided to the FCPS School Board, including five-year trends in applicants and offers.

## Conclusion

In summary, given the prior attempts that have been made to improve diversity of students at TJHSST, FCPS feels the hybrid approach is the best approach to increasing diversity at TJHSST without diminution of the school's high standards. This recommendation falls squarely on the belief that there are many more students qualified and able both to contribute to and benefit from attendance at TJHSST than can be accommodated at the school, even with an expanded class size of 550. Further, there is greater diversity among the highly qualified students than those who are currently being admitted to TJHSST. While the revised holistic approach may move us in the intended direction of greater diversity, given the many attempts to improve diversity at the school through changes in the admissions process over the last decade, a more sweeping change, such as the hybrid lottery that was endorsed by experts, is FCPS' most promising approach to making immediate inroads toward greater student diversity at TJHSST. The hybrid approach, coupled with continued work on the caring culture at TJHSST and the pipeline, should allow FCPS to ultimately support attaining more diverse representation at TJHSST that would better reflect the School Board's belief, as reflected in Policy 3354, that diversity "enhances the robust exchange of ideas and is an important factor in developing leaders who will be prepared to address future scientific and technological challenges."

*Additional details related to the TJHSST admissions process and recommended revisions that were requested by the School Board as next steps are available in Appendix C.*

**APPENDIX A**

**School Pathways**

The School Board expressed interest in selecting students by school as opposed to by region. For information, potential school caps for the Hybrid Lottery are listed below. (Rounding may alter the actual numbers)

| School Caps | | |
|---|---|---|
| **Region** | **315 Seats** | |
| 1 | Carson | 16 |
| 1 | Cooper | 11 |
| 5 | Franklin | 10 |
| 5 | Frost | 13 |
| 2 | Glasgow | 14 |
| 3 | Hayfield | 11 |
| 1 | Herndon | 13 |
| 2 | Holmes | 7 |
| 1 | Hughes | 12 |
| 4 | Irving | 12 |
| 2 | Jackson | 12 |
| 3 | Key | 9 |
| 2 | Kilmer | 13 |
| 4 | Lake Braddock | 17 |
| 5 | Lanier | 12 |
| 4 | Liberty | 12 |
| 2 | Longfellow | 15 |
| 2 | Poe | 8 |
| 4 | Robinson | 12 |
| 5 | Rocky Run | 11 |
| 3 | Sandburg | 17 |
| 4 | South County | 11 |
| 5 | Stone | 8 |
| 1 | Thoreau | 14 |
| 3 | Twain | 12 |
| 3 | Whitman | 10 |

# APPENDIX B

## Details on Modeling

### Modeling Demographic Make-up within Regions

The admissions process to Thomas Jefferson High School for Science and Technology (TJHSST) is currently being revisited. As such, the Office of Research and Strategic Improvement (ORSI) was tasked with modeling student demographic make-up for two different lottery-style models, based on specific eligibility criteria for the current class of grade 8 students. See Table B-1 below for the eligibility criteria for the two models. Both models use the first two criteria, GPA of 3.5 or higher and participation in Algebra I or higher in 8th grade. Model 2 added two additional criteria, participation in Honors level courses in math and science and participation in a 3rd Honors level course in another content area or participation in the Young Scholars program. Applying the criteria for Model 1 resulted in the identification of approximately grade 8 6,300 'eligible' students while applying the additional criteria for Model 2 restricted the pool of 'eligible' students to approximately 4,400 grade 8 students.

**Table B-1: Eligibility Criteria for each TJHSST admissions model**

| Eligibility Criteria | Model 1 | Model 2 |
|---|---|---|
| 3.5 GPA or higher | X | X |
| Participation in Algebra I or higher by 8th grade | X | X |
| Participation in Honors Math and Honors Science in 8th grade | | X |
| Participation in a third honors course OR participation in Young Scholars | | X |
| | | |
| **Total "eligible" 8th grade students** | 6,293 | 4,357 |

The lottery modeling was then conducted on the pools of eligible students that resulted from the two sets of eligibility criteria. To model the lottery approach, a total of 385 students were randomly selected 1,000 times, with a specific number coming from each Region[12] based on the proportion of the division population. The information below provides the average demographic make-up. Tables B-2 and B-3 provide the following information:

- Column 1: Student Group – includes race/ethnicity, English Learner status, Free and Reduced meal status, students with a 504 and students with disabilities status.
- Column 2: The number of total eligible students
- Column 3: The average percent of 385 admitted by student group.
- Column 4 and 5: The range (min and max) of the percent of the 385 admitted by student group[13]
- Column 6: The average number of students admitted from each student group

Table B-2 shows the average demographic make-up of students for the first model where 8th grade students were eligible if they had a GPA of 3.5 or greater and if they participated in Algebra I or higher. The average percent of admitted students from the simulation reflects the same percentage of students in the total pool. In particular, the lottery favors White and Asian students who collectively make up approximately three-quarters of the students admitted based on the simulation. English Learner students and students with disabilities had the lowest percentage of students admitted in the first model.

[12] Random selection of the 385 students was constrained using the following weighted Region numbers: Region 1 =81 students, Region 2 = 85 students, Region 3 = 73 students, Region 4 = 79 students, Region 5 = 67 students.

[13] The range means that the minimum percent in the simulation of random selection, at least 21% and no more than 35 percent of Asian students were selected, etc. for each student group across the 1,000 times.

**Table B-2: Model 1 demographic make-up**

| Student Group | Number of eligible students | Avg. Percent Admitted[14] | Min percent Admitted | Max percent Admitted | Avg. number Admitted[15] |
|---|---|---|---|---|---|
| Asian | 1,817 | 28% | 21% | 34% | 107 |
| Black | 418 | 7% | 4% | 11% | 29 |
| Hispanic | 788 | 13% | 9% | 19% | 51 |
| White | 2,827 | 45% | 37% | 53% | 173 |
| Other | 443 | 7% | 3% | 11% | 27 |
| EL | 28 | 0% | 0% | 2% | 2 |
| FRM | 825 | 14% | 9% | 19% | 55 |
| S504 | 285 | 5% | 1% | 8% | 18 |
| SWD | 244 | 4% | 1% | 7% | 15 |

Table B-3 shows the average demographic make-up of students in the second model, which was more stringent than the first model and included additional eligibility criteria such as participating in 3 or more honors classes or participating in 2 honors classes and the Young Scholars program. Similar to the first model, the average percent of students admitted in the simulation reflects the same make-up of the overall pool. Compared to Model 1, a similar percentage of White and Asian students were admitted in the simulation (73 percent in the first model and 75 percent in the second model), however these two additional percentage points meant that a fewer percent of Hispanic students were admitted in the simulation. Additionally, there was a 2 percentage point difference in the models for students who are economically disadvantaged, with model 1 admitting a larger percentage of students in this group compared to model 2. Finally, the model 2 simulation resulted in fewer students with disabilities admitted compared to model 1.

**Table B-3: Model 2 demographic make-up**

| Student Group | Number of eligible students | Avg. Percent Admitted[16] | Min percent Admitted | Max percent Admitted | Avg. number Admitted[17] |
|---|---|---|---|---|---|
| Asian | 1,425 | 31% | 23% | 38% | 121 |
| Black | 270 | 7% | 3% | 11% | 27 |
| Hispanic | 439 | 11% | 6% | 15% | 42 |
| White | 1,895 | 44% | 35% | 51% | 168 |
| Other | 328 | 7% | 3% | 12% | 29 |
| EL | 3 | 0% | 0% | 1% | 0 |
| FRM | 510 | 12% | 8% | 18% | 48 |
| S504 | 168 | 4% | 1% | 7% | 15 |
| SWD | 91 | 2% | 0% | 4% | 8 |

Below are similar results for modeling of 315 FCPS students admitted, which is similar to the number of students that would be admitted after 100 students were admitted by being the top scorers. These models assume that FCPS would have approximately 70 students admitted as top rated applicants, which is the approximate percentage of FCPS students admitted to TJHSST each year as compared to other participating school divisions and private schools.

[14] The standard deviations for each student group are as follows: Asian =2%, Black = 1%, Hispanic=2%, White=3%, Other=1%, EL=0%, FRM=2%, S504=1%, SWD=1%
[15] Numbers may not add to 385 due to rounding
[16] The standard deviations for each student group are as follows: Asian =2%, Black = 1%, Hispanic=2%, White=3%, Other=1%, EL=0%, FRM=2%, S504=1%, SWD=1%
[17] Numbers may not add to 385 due to rounding

**Table B-4: Model 1 demographic make-up with only 315 students**

| Student Group | Number of eligible students | Avg. Percent Admitted[18] | Min percent Admitted | Max percent Admitted | Avg. number Admitted[19] |
|---|---|---|---|---|---|
| Asian | 1,817 | 28% | 21% | 35% | 88 |
| Black | 418 | 7% | 3% | 11% | 23 |
| Hispanic | 788 | 13% | 7% | 20% | 42 |
| White | 2827 | 45% | 36% | 54% | 141 |
| Other | 443 | 7% | 3% | 12% | 22 |
| EL | 28 | 0% | 0% | 2% | 2 |
| FRM | 825 | 14% | 8% | 24% | 45 |
| S504 | 285 | 4% | 1% | 9% | 15 |
| SWD | 244 | 4% | 1% | 9% | 13 |

**Table B-5: Model 2 demographic make-up with only 315 students**

| Student Group | Number of eligible students | Avg. Percent Admitted[20] | Min percent Admitted | Max percent Admitted | Avg. number Admitted[21] |
|---|---|---|---|---|---|
| Asian | 1,425 | 31% | 24% | 39% | 99 |
| Black | 270 | 7% | 2% | 12% | 22 |
| Hispanic | 439 | 11% | 8% | 19% | 34 |
| White | 1,895 | 44% | 35% | 53% | 138 |
| Other | 328 | 7% | 3% | 13% | 24 |
| EL | 3 | 0% | 0% | 1% | 0 |
| FRM | 510 | 12% | 5% | 19% | 40 |
| S504 | 168 | 4% | 1% | 8% | 13 |
| SWD | 91 | 2% | 0% | 5% | 7 |

## Summary of Region Modeling

- The demographic make-up of eligible students in each pool ended up being the same percentage of students who were admitted in the various student groups. This means that the lottery is likely to favor groups who have a greater representation in the pool (e.g. White and Asian students).
- Eligibility is not the same as either the applicant pool or the pool of highly-qualified applicants that would be included in the lottery, which means that results will likely look different based on who applies and receives an high rating through the holistic review process.
- Model 1, which had a less restrictive eligibility criteria, was more favorable toward Hispanic, Economically Disadvantaged, and Students with Disabilities student groups compared to Model 2.
- English Learner students had very little representation in the overall eligibility pool for both models, and overall admitted status based on the simulations were at zero percent.

## Disaggregated Data by Region

When disaggregating the results of model 2 by Region, there are similar results where the demographic make-up of the admitted students reflects a similar demographic make-up of the pool. This means that there will be greater diversity of the admitted class in Regions where there is more diversity in the pool. Asian and White students make up the

[18] The standard deviations for each student group are as follows: Asian =2%, Black = 1%, Hispanic=2%, White=3%, Other=1%, EL=0%, FRM=2%, S504=1%, SWD=1%

[19,10] Numbers may not add to 315 due to rounding

[20] The standard deviations for each student group are as follows: Asian =3%, Black = 1%, Hispanic=2%, White=3%, Other=2%, EL=0%, FRM=2%, S504=1%, SWD=1%

largest percentage of students for most Regions, except in Region 3 where White students represented 48 percent of the admitted class and Asian, Hispanic, and Black students each represented approximately 15 percent of the total pool. The following indicates the total number of eligible students for each Region:

- Region 1: 1,056 eligible students
- Region 2: 886 eligible students
- Region 3: 608 eligible students
- Region 4: 898 eligible students
- Region 5: 909 eligible students

**Table B-6: Region 1 - Demographic Make-up of FCPS Students in the TJHSST Class of 2025, based on Modeling the Hybrid Lottery**

| Student Group | Number of Students Meeting Applicant Requirements | Average. Percent of Admitted Class[22] | Minimum Percent of Admitted Class | Maximum Percent of Admitted Class | Average Number of Admitted Students |
|---|---|---|---|---|---|
| Asian | 371 | 35% | 19% | 52% | 29 |
| Black | 26 | 3% | 0% | 9% | 3 |
| Hispanic | 81 | 8% | 1% | 19% | 7 |
| White | 492 | 46% | 26% | 63% | 38 |
| English Learners | 0 | 0% | 0% | 0% | 0 |
| Economically Disadvantaged | 72 | 7% | 0% | 17% | 6 |
| Students with Disabilities | 18 | 2% | 0% | 10% | 2 |

**Table B-7: Region 2 Demographic Make-up of FCPS Students in the TJHSST Class of 2025, based on Modeling the Hybrid Lottery**

| Student Group | Number of Students Meeting Applicant Requirements | Average. Percent of Admitted Class[23] | Minimum Percent of Admitted Class | Maximum Percent of Admitted Class | Average Number of Admitted Students |
|---|---|---|---|---|---|
| Asian | 287 | 32% | 18% | 46% | 28 |
| Black | 59 | 7% | 1% | 15% | 6 |
| Hispanic | 118 | 13% | 4% | 24% | 12 |
| White | 353 | 40% | 22% | 55% | 34 |
| English Learners | 0 | 0 | 0% | 0% | 0 |
| Economically Disadvantaged | 166 | 19% | 6% | 31% | 16 |
| Students with Disabilities | 20 | 2% | 0% | 8% | 2 |

[22] The standard deviations for each student group are as follows: Asian =5%, Black = 2%, Hispanic=3%, White=6%, EL=0%, FRM=3%, SWD=1%

[23] The standard deviations for each student group are as follows: Asian =5%, Black = 3%, Hispanic=3%, White=5%, EL=0%, FRM=4%, SWD=2%

**Table B-8 Region 3 - Demographic Make-up of FCPS Students in the TJHSST Class of 2025, based on Modeling the Hybrid Lottery**

| Student Group | Number of Students Meeting Applicant Requirements | Average. Percent of Admitted Class[24] | Minimum Percent of Admitted Class | Maximum Percent of Admitted Class | Average Number of Admitted Students |
|---|---|---|---|---|---|
| Asian | 97 | 16% | 3% | 29% | 12 |
| Black | 85 | 14% | 4% | 26% | 11 |
| Hispanic | 100 | 16% | 4% | 29% | 12 |
| White | 289 | 48% | 29$ | 64% | 35 |
| English Learners | 2 | 0% | 0% | 3% | 0 |
| Economically Disadvantaged | 123 | 20% | 8% | 36% | 15 |
| Students with Disabilities | 14 | 2% | 0% | 8% | 2 |

**Table B-9: Region 4 Demographic Make-up of FCPS Students in the TJHSST Class of 2025, based on Modeling the Hybrid Lottery**

| Student Group | Number of Students Meeting Applicant Requirements | Average. Percent of Admitted Class[25] | Minimum Percent of Admitted Class | Maximum Percent of Admitted Class | Average Number of Admitted Students |
|---|---|---|---|---|---|
| Asian | 270 | 30% | 11% | 46% | 24 |
| Black | 66 | 8% | 0% | 18% | 6 |
| Hispanic | 85 | 10% | 1% | 23% | 8 |
| White | 409 | 46% | 29% | 63% | 36 |
| English Learners | 1 | 0% | 0% | 1% | 0 |
| Economically Disadvantaged | 72 | 8% | 1% | 18% | 6 |
| Students with Disabilities | 19 | 2% | 0% | 9% | 4 |

**Table B-9 Region 5 - Demographic Make-up of FCPS Students in the TJHSST Class of 2025, based on Modeling the Hybrid Lottery**

| Student Group | Number of Students Meeting Applicant Requirements | Average. Percent of Admitted Class[26] | Minimum Percent of Admitted Class | Maximum Percent of Admitted Class | Average Number of Admitted Students |
|---|---|---|---|---|---|
| Asian | 400 | 44% | 25% | 61% | 30 |
| Black | 34 | 4% | 0% | 12% | 3 |
| Hispanic | 55 | 6% | 0% | 15% | 5 |
| White | 352 | 39% | 24% | 57% | 26 |
| English Learners | 0 | 0% | 0% | 0% | 0 |
| Economically Disadvantaged | 77 | 8% | 0% | 19% | 6 |
| Students with Disabilities | 20 | 2% | 0% | 7% | 2 |

[24] The standard deviations for each student group are as follows: Asian =4%, Black = 4%, Hispanic=4%, White=5%, EL=1%, FRM=4%, SWD=2%
[25] The standard deviations for each student group are as follows: Asian =5%, Black = 3%, Hispanic=3%, White=6%, EL=0%, FRM=3%, SWD=2%
[26] The standard deviations for each student group are as follows: Asian =6%, Black = 2%, Hispanic=3%, White=6%, EL=0%, FRM=3%, SWD=2%

**Table B-10 Region 1 - Demographic Make-up of FCPS Students in the TJHSST Class of 2025, based on Modeling the Hybrid Lottery (Pool of 315)**

| Student Group | Number of Students Meeting Applicant Requirements | Average. Percent of Admitted Class[27] | Minimum Percent of Admitted Class | Maximum Percent of Admitted Class | Average Number of Admitted Students |
|---|---|---|---|---|---|
| Asian | 371 | 35% | 17% | 52% | 24 |
| Black | 26 | 3% | 0% | 9% | 2 |
| Hispanic | 81 | 8% | 0% | 21% | 5 |
| White | 492 | 47% | 23% | 65% | 31 |
| English Learners | 0 | 0% | 0% | 0% | 0 |
| Economically Disadvantaged | 72 | 7% | 0% | 17% | 5 |
| Students with Disabilities | 18 | 2% | 0% | 9% | 2 |

**Table B-11: Region 2 Demographic Make-up of FCPS Students in the TJHSST Class of 2025, based on Modeling the Hybrid Lottery (Pool of 315)**

| Student Group | Number of Students Meeting Applicant Requirements | Average. Percent of Admitted Class[28] | Minimum Percent of Admitted Class | Maximum Percent of Admitted Class | Average Number of Admitted Students |
|---|---|---|---|---|---|
| Asian | 287 | 32% | 17% | 49% | 23 |
| Black | 59 | 7% | 0% | 17% | 5 |
| Hispanic | 118 | 13% | 6% | 33% | 9 |
| White | 353 | 40% | 20% | 58% | 28 |
| English Learners | 0 | 0% | 0% | 0% | 0 |
| Economically Disadvantaged | 166 | 19% | 6% | 33% | 13 |
| Students with Disabilities | 20 | 2% | 0% | 7% | 2 |

**Table B-12: Region 3 - Demographic Make-up of FCPS Students in the TJHSST Class of 2025, based on Modeling the Hybrid Lottery (Pool of 315)**

| Student Group | Number of Students Meeting Applicant Requirements | Average. Percent of Admitted Class[29] | Minimum Percent of Admitted Class | Maximum Percent of Admitted Class | Average Number of Admitted Students |
|---|---|---|---|---|---|
| Asian | 97 | 16% | 3% | 30% | 10 |
| Black | 85 | 14% | 2% | 27% | 9 |
| Hispanic | 100 | 17% | 3% | 32% | 10 |
| White | 289 | 48% | 30% | 67% | 29 |
| English Learners | 2 | 0% | 0% | 3% | 0 |
| Economically Disadvantaged | 123 | 20% | 3% | 35% | 12 |
| Students with Disabilities | 14 | 4% | 0% | 10% | 2 |

[27] The standard deviations for each student group are as follows: Asian =6%, Black = 2%, Hispanic=3%, White=6%, EL=0%, FRM=3%, SWD=1%

[28] The standard deviations for each student group are as follows: Asian =5%, Black = 3%, Hispanic=3%, White=6%, EL=0%, FRM=4%, SWD=2%

[29] The standard deviations for each student group are as follows: Asian =4%, Black = 4%, Hispanic=5%, White=6%, EL=1%, FRM=5%, SWD=2%

**Table B-13: Region 4 - Demographic Make-up of FCPS Students in the TJHSST Class of 2025, based on Modeling the Hybrid Lottery (Pool of 315)**

| Student Group | Number of Students Meeting Applicant Requirements | Average. Percent of Admitted Class[30] | Minimum Percent of Admitted Class | Maximum Percent of Admitted Class | Average Number of Admitted Students |
|---|---|---|---|---|---|
| Asian | 270 | 30% | 11% | 48% | 20 |
| Black | 66 | 7% | 0% | 18% | 5 |
| Hispanic | 85 | 10% | 2% | 28% | 7 |
| White | 409 | 46% | 28% | 65% | 30 |
| English Learners | 1 | 0% | 0% | 2% | 0 |
| Economically Disadvantaged | 72 | 8% | 0% | 18% | 6 |
| Students with Disabilities | 19 | 2% | 0% | 9% | 2 |

**Table B-14: Region 5 - Demographic Make-up of FCPS Students in the TJHSST Class of 2025, based on Modeling the Hybrid Lottery (Pool of 315)**

| Student Group | Number of Students Meeting Applicant Requirements | Average. Percent of Admitted Class[31] | Minimum Percent of Admitted Class | Maximum Percent of Admitted Class | Average Number of Admitted Students |
|---|---|---|---|---|---|
| Asian | 400 | 44% | 25% | 65% | 25 |
| Black | 34 | 4% | 0% | 15% | 3 |
| Hispanic | 55 | 6% | 0% | 16% | 4 |
| White | 352 | 39% | 20% | 60% | 22 |
| English Learners | 0 | 0% | 0% | 0% | 0 |
| Economically Disadvantaged | 77 | 8% | 0% | 20% | 5 |
| Students with Disabilities | 20 | 2% | 0% | 9% | 2 |

[30] The standard deviations for each student group are as follows: Asian =6%, Black = 3%, Hispanic=4%, White=6%, EL=0%, FRM=3%, SWD=2%

[31] The standard deviations for each student group are as follows: Asian =7%, Black = 2%, Hispanic=3%, White=6%, EL=0%, FRM=4%, SWD=2%

**APPENDIX C**

**School Board Next Steps from September 15, 2020 and October 6, 2020 Work Sessions on TJHSST Admissions**

## Next Steps from the September 15, 2020 Work Session

109. Review of Middle school offerings. i.e. Algebra courses and STEM programming by region and school.
**Response:**

| Courses | School Offered |
|---|---|
| Algebra 1 | All |
| Algebra 1 Honors | All |
| Algebra 2 Honors* | 7 (Carson, Copper, Frost, Jackson, Longfellow, Robinson, Rocky Run) |
| Online Campus Algebra 2 Honors | All |
| Engineering 1 | All |
| Engineering 2 | All |
| Engineering 3 | 8 (Carson, Jackson, Kilmer, Hughes, Lake Braddock, Lanier, Robinson, South County) |

Students across the division have access to Algebra 2 Honors via the Online Campus. Many students meet the prerequisite for this course by competing Geometry Honors via the Online Campus during the summer between grade 7 and grade 8.

110. Committee/mechanism to address climate at TJ? .
**Response:**
See Caring Culture Supports for Students section of this report and October 6, 2020, Revised Merit Lottery presentation.

111. Request further delay for submission of plan to state until after our SB discussion on Oct 8th to allow for public engagement and follow up on next steps.

**Response:**

Superintendent confirmed an extension of the deadline for the submission of the state plan following the October 8, 2020 Board presentation. Two town halls will be held prior to the October 8th Board Vote (9/23/20 and 10/7/20).

112. Review current STEM offerings at high schools and explore budget priorities to expand STEM programming and options at our schools based on the review.

**Response:**

HS STEM programing and options will be reviewed and budget priorities developed as part of the HS Academy Review to be completed during SY 2020-21.

113. Explore a two-pronged approach.

**Response:**

If this refers to changing the admission process, while strengthening the pipeline, that is the intention of the Hybrid approach presented in this paper.

114. Evaluate the merits of a school-based or pyramid recruitment approach in place of one based on region, to be updated annually, based on enrollment.

**Response:**

Division Approach:

- Would still provide more seats to schools with greater applicants
- Does not increase geographic representation

Pyramid Approach

- Only one pyramid, the Annandale pyramid, has more than one middle school. Using this approach would disadvantage the Annandale pyramid.

School Approach

- A school level lottery would significantly limit the number of available seats for the schools with greater interest. For example, Carson MS had 37 attending students admitted to the class of 2024. With a school-level approach, Carson MS would be limited to 18 admitted students.

115. Include a commitment to provide a letter or use an alternate tool/strategy to mitigate the opt-in bias issue.

**Response:**
See October 6, 2020, Revised Merit Lottery presentation.

116. Outline the priorities of the TJ Admissions Office after the admissions process is changed. See

**Response:**
October 6, 2020, Revised Merit Lottery presentation.

117. Identify budget priorities that reflect increased TJ access as well as consistent middle school

programming to strengthen the pipeline.

**Response:**

The recently completed AAP Study provides recommendations for strengthening the TJ pipeline by expanding Local Level IV AAP programs at the elementary and middle school levels, as well as, frontloading talent development through consistent implementation of the division's Young Scholars program.

118. Explore how to address cultural bias that may exist regarding traditionally underrepresented groups.

**Response:**

When we consider the biases that are present for our underrepresented, minority students as they work to gain access to TJ, we offer the following thoughts and guiding questions:

- In what ways are our schools being transparent and open when supporting all families in understanding the requirements and processes for accessing TJ?
- How do overrepresented students benefit from enrichment after school provided by the school and through private means?
- What systems are in the pipeline that support select groups of students being prepared for TJ in the elementary and middle years?
- How does the FCPS vision and mission (i.e., POG) align with admission to TJ?

When we think about cultural bias, we want to assert that the instructional practices required and advocated for in order to access TJ are not aligned with the culturally responsive educational practices that have been forwarded by FCPS. Culturally Responsive instruction is neither standardized nor scripted and requires the opportunity for students to demonstrate their learning in ways that build off of their assets.

Additionally we need to consider the support necessary for underrepresented students once they are admitted to TJ. Many black and Hispanic students have articulated the difficulties they face once they have been accepted and continue to feel disenfranchised from the school itself.

Ultimately, although we can name and list ways in which the process for admissions, preparation, and support are not culturally responsive to all students this is not the most important question that we need to be asking. The questions we pose that need to be asked are:

- What do we believe it means to be worthy of being accepted at TJ?
- How are we defining meritocracy? And what are the biases entrenched in meritocracy belief systems?
- What systems and practices do our schools implement that allow our school system to perpetuate the racial disproportionalities that are present beginning in elementary school?
- How are we providing equal opportunities for all students to receive the services and experiences essential for access to TJ?
    - Afterschool enrichment
    - Test preparation
    - Access to Level IV curricula

119. Data regarding diversity of applicant pool and how to increase diversity of applicant pool.

**Response:**
See the Research and Data on Admission Challenges and Research and Data on Potential Remedies sections of this report .

120. Explore outreach efforts to build diversity of applicant pool.

**Response:**
See October 6, 2020, Revised Merit Lottery presentation.

121. Explore additional magnet high schools.

**Response:**

Staff will engage with the School Board Office to determine priorities related to additional magnets.

122. Commit to a strategic plan to address long standing issues affecting diversity and equity in AAP including frontloading of math and science curriculum and fidelity of implementation of Young scholars across schools and AARTs in all schools.

**Response:**

These topics will be addressed in the October 27th School Board work session in which the recommendations from the external APP study will be reviewed and prioritized.

123. Explore adding a problem-solving question on the student information sheet 10.

**Response:**
See October 6, 2020, Revised Merit Lottery presentation.

124. Explore utilizing a weighted GPA.

**Response:**

See October 6, 2020, Revised Merit Lottery Proposal Additional Next Step Responses.

125. Community outreach and communication plan.

**Response:**

See Communication with Stakeholders section of this report.

126. By Oct 8th - clearer information on application process, problem solving on student info sheet and holistic review of courses taken by student, including math and science courses as part of the admissions process.

**Response:**

See Final Proposals for the TJHSST Admissions Process section of this report.

127. Availability of advanced and science across all ES schools.

**Response:**

Staff is currently reviewing current opportunities and access to advanced mathematics across elementary schools. Eligibility criteria and programming are also under review.

We do not currently have an advanced science program. The Jason Project curriculum, used in Level IV AAP, is also included in our general education science units.

128. Work sessions and board committee to address ongoing TJ concerns including looking at historical documents.

**Response:**

The School Board Office will schedule these meetings.

129. Outline possible support for admittees this summer.

**Response:**

Planned transition resources for students:
• Academic supports: summer enrichment courses, organizational and study skills support, advisory groups, 8th period tutoring
• Social and Emotional supports: student mentors, teacher advisory, lessons on social-emotional learning, 8th period clubs
• Schoolwide emphasis for all students, particularly grades 10-12, regarding accepting and celebrating all students at TJ

130. Programming and capacity issues at base high schools that might be impacted by TJ admissions process change.

**Response:**

FCPS high school students have a wide selection of courses available to them. Staff will need to consider what additional courses may be added in the future. Current offerings will meet the needs of the incoming grade 9 students.

131. Look at pros and cons of governor schools versus academies to address equity and access to advanced learning opportunities including ability to serve the area in which the school resides.

**Response:**

Governors Schools: The Virginia Department of Education, in conjunction with localities, sponsors regional Academic-Year Governor's Schools that serve gifted high school students during the academic year. Currently, 19 Academic-Year Governor's Schools across the state provide students with acceleration and exploration in areas ranging from the arts, to government and international studies, and to mathematics, science, and technology.

FCPS Academies: A high school academy is a center within an existing high school that offers advanced technical and specialized courses that successfully integrate career and academic preparation. Enrollments in the Academy elective course offerings will provide students with career and academic preparation for postsecondary education and/or career fields. Students enrolling in Academy elective courses will be provided with opportunities to participate in a variety of career experiences including shadowing, mentoring, and/or internships with local businesses.

132. Summary crosswalk/analysis of the 5 schools' Admissions Process in the appendix.

**Response:**

| School | State | US News Nat'l Ranking | School Enrollment | Lottery | Enrollment/ Application | Eligibility | Additional Information |
|---|---|---|---|---|---|---|---|
| BASIS - Arizona | AZ | Chandler location 7 | Multiple designated affiliate BASIS Charter Schools | Lottery is drawn based upon enrollment priorities (9 of them) (ie, siblings, employee children) Lottery draw Jan 14 | Nov 5 - Dec 15 Post Open Enroll - Dec 16 (Rolling adm) | No restriction on basis of academic achievement or any protected class. Residency must be verified no later than first day of school. | |
| Gwinnett School of Math, Science & Technology | GA | 12 | 1031 17/18 | 706 in Pool for FY 20/21 (375 slots) Lottery held Feb 11 | Nov 1 - Jan 22 | Math equivalent of Carnegie-eligible Accelerated Algebra or higher. Non-accelerated must earn first semester grade of 90 or higher and score in distinguished category on Georgia Milestons E-O-C Test in May | 80% minority 32% FRM |
| International Community School | WA | Unranked | 250 | Lottery draw Jan 10, 2020 | Nov 8 - Dec 13 2019 | Open to All Students that reside in the Lake Washington School District. (Residency requirements) | IB Curriculum - 100 countries represented at school (5-12 grades) |
| Loveless Academic Magnet Program - Montgomery Public Schools | AL | 23 | 507 (2017-18) | Lottery Breakdown; K-1 Lottery Apr 28; Grades 2-5 Apr 29; Grades 9-12 May 6 | Jan 6 - Jan 31 | 3.0 GPA or higher and must maintain a B average. Failure to maintain GPA and discipline requirements will result in loss of eligibility. Report card EOY 2019-2020 used for final eligibility. | Lottery for grade level groupings |
| Raisbeck Aviation | WA | Not Ranked | 105 spots | Lottery draw (if needed) Mar 2 | Jan 1 - 31 (Rolling admission) | 51% (55 seats) reserved for students within Highline PS boundaries (Lottery Priority 1); 20 seats reserved within boundaries of Seattle PS Priority 2; 30 remaining seats for all other districts in Priority 3 | |

133. Provide the Numbers and % of applicants of 3.5 Unweighted GPA vs Weighted GPA for 2019 Admissions Class.

**Response:**

Unweighted GPA for accepted students (end of course 7th grade and first quarter 8th grade marks)

| Year | 2019-20 | 2018-19 | 2017-18 | 2016-17 | 2015-2016 | 2014-2015 |
|---|---|---|---|---|---|---|
| Range | 3.31 – 4.00 | 3.43 –4.00 | 3.47 –4.00 | 3.66 –4.00 | 3.51 – 4.00 | 3.05 – 4.00 |
| Mean | 3.96 | 3.96 | 3.97 | 3.97 | 3.97 | 3.97 |

Unweighted GPA is the most equitable approach because

- Middle schools do not weight courses
- Unweighted GPA does not penalize students who do not have an opportunity to be in advanced courses at their enrolling school

134. Provide the Application Numbers for each Middle School for 2019 Admissions Class.

**Response:**

These were sent to the School Board on September 25, 2020.

135. Need applicant demographics for 2019 admission class – pool applied, pool accepted, and pool enrolled.

**Response:**

These were sent to the School Board on September 25, 2020.

136. Process for regular review and analysis and adjustment of changes.

**Response:**

After each freshman class is admitted to TJHSST, the Office of TJ Admissions conducts a thorough review of the background of admitted applicants. The Board has received this information in Closed sessions, due to their confidential nature. The Office of TJ Admissions is committed to continuing this review. Additionally,

the results of enhanced outreach elements will be measured to ensure that future outreach is done in the most effective ways.

## Next Steps from the October 6, 2020 Work Session

**161. Investigate the impact of a pyramid/middle school approach to the allocation**

**Response: Response:**

Division Approach:

- Would still provide more seats to schools with greater applicants
- Does not increase geographic representation Pyramid Approach
- Only one pyramid, the Annandale pyramid, has more than one middle school. Using this approach would disadvantage the Annandale pyramid.

School Approach

- A school level lottery would significantly limit the number of available seats for the schools with greater interest. For example, Carson MS had 37 attending students admitted to the class of 2024. With a school-level approach, Carson MS would be limited to 18 admitted students.

See Appendix A of this paper for more information.

**162. Confirm in our plan submitted to the state that we will not have the admissions test for TJHSST, Establish goal that TJ class will reflect demographics of NOVA Region, Expand the admissions to align with program capacity, e.g. 50 more seats**

**Response:**

These elements were included in the plan submitted to the state. The capacity has been increased to 550.

**163. Discuss how to determine the "highest qualified" when the pool is already down selected by merit. What are the numbers (100 versus normed to gifted in the population as whole)**

**Response:**

If one assumes that those admitted to TJHSST represent the top 100 in a normed sample of eighth graders, the 100 students would represent approximately 0.7 percent of all eighth graders (assuming 14,000 students in the grade). Data on mathematics coursetaking in the eighth grade indicate that many students in high level mathematics courses are not entering the application process so this is probably an underestimation of the group's percentage, if viewed this way. On the other hand, this may be an overestimation if you consider all students in all participating school divisions who send students to TJHSST. An alternative means of looking at this is to consider that roughly 70 of the top 100 slots are expected to be filled by FCPS students. In this case, the top 70 in a normed sample of eighth graders represents approximately 0.5 percent of all eighth graders (assuming 14,000 students in the grade). In any case, it can be assumed that the top 100 rated applicants on TJHSST admissions criteria represent the highest percentile (likely around 99$^{th}$) of students on the criteria considered for admission to the school.

**164. Please provide a description of outreach that is designed to reach identified populations within FCPS.**

**Response:**

See main report sections titled Stakeholder Engagement and Communication with Stakeholders.

**165. Please identify accountability measures and metrics of diversity goals, as well as, the proposed method of monitoring same.**

**Response:**

See main report section titled Accountability Metrics.

**166. State plan requires a plan for diversity of staff as well. What is the current status of diversity in the staff? What are the goals for diversity? and what is the plan to achieve it?**

**Response:**

**Current Staff Diversity Data for TJHSST:**

| Employee Categories | Asian Percent | Black or African American Percent | Hispanic or Latino Percent | Multi-racial (two or more races) Percent | White Percent | Female Percent | Male Percent |
|---|---|---|---|---|---|---|---|
| Teachers | 10.00% | 3.33% | 2.50% | 3.33% | 80.83% | 58.33% | 41.67% |
| Principals, APs, Student Services and Activities Directors | 0.00% | 28.57% | 0.00% | 0.00% | 71.43% | 57.14% | 42.86% |
| Instructional and Specialized Assistants | 50.00% | 0.00% | 0.00% | 0.00% | 50.00% | 75.00% | 25.00% |
| Office Support | 0.00% | 9.09% | 18.18% | 0.00% | 72.73% | 100.00% | 0.00% |
| Specialists and Technical Personnel | 0.00% | 9.09% | 9.09% | 0.00% | 81.82% | 63.64% | 36.36% |
| Food Services Personnel | 80.00% | 0.00% | 10.00% | 0.00% | 10.00% | 80.00% | 20.00% |
| Trades Personnel | 0.00% | 0.00% | 0.00% | 0.00% | 100.00% | 0.00% | 100.00% |
| Custodial Personnel | 62.50% | 6.25% | 25.00% | 6.25% | 0.00% | 31.25% | 68.75% |
| Total | 17.78% | 5.00% | 6.11% | 2.78% | 68.33% | 60.00% | 40.00% |

Goal 3: Premier Workforce of the FCPS Strategic Plan includes two aspirations centered around the diversity of staff. These aspirations drive the work for all schools within the division.

- The diversity of qualified teacher applicants will match the diversity of Fairfax County residents.
- The diversity of hired teachers will match the diversity of qualified teacher applicants.

**167. Examine the possibility of opt-out lottery selection in place of opt-in and share relevant considerations.**

**Response:**

If an opt out lottery process was put in place, we would likely conduct the lottery based on criteria such a GPA and course requirements, and it would not allow for one of the most important factors, passion for STEM. It may also result in extending invitations to a large number of students who have no interest in attending the school, and therefore create the need for multiple communications and delayed information to families.

**168. "Do an analysis of the ramifications to our base high schools given a new TJ admissions process. This data driven research will include both an analysis of increased student enrollment at the high schools and the need for additional courses in advanced math, science and computer programming such as: differential equations, probability theory, quantum physics, machine learning, post AP courses, etc.**

**Response:**

Staff will need to do an analysis of course offerings at TJHSST and determine the best way to provide opportunity and access more broadly. This could be through a combination of school based optional course offerings, inclusion in the Online Campus, or Dual Enrollment agreements with university partners.

**169. Update statistical modeling for Dr. Brabrand's two merit lottery plans -- factor in what an increased TJ student body would do to these projections. Conduct statistical modeling of what the merit lottery or "holistic" review would mean for admissions numbers when using the middle school approach.**

**Response:**

Modeling of the lottery approach by region is summarized in the Accountability Metrics section of this report. Additional details on the modeling, including the increase in size of TJ student body from 500 to 550 per class is contained in Appendix B of this report. Modeling of the hybrid approach's impact on diversity is unavailable because ratings on the components of the approach used last year or proposed for this year do not exist.

**170. Provide a summary of previous attempts to improve the process and results.**

**Response:**

See Research and Data on Potential Remedies section of this report.

**171. Bring to the board a holistic admissions approach that does not contain a lottery as an option for the board to consider as an alternative plan.**

**Response:**

See Final Proposals for TJHSST Admissions Process section of this report.

**172. Provide the past 5-10 years of the recalculated Core GPA data and STEM GPA (broken out by decile) for all FCPS TJ Applicants, Semi-finalists, and Accepted Students. (Per Jeremy's remarks during the Work Session)**

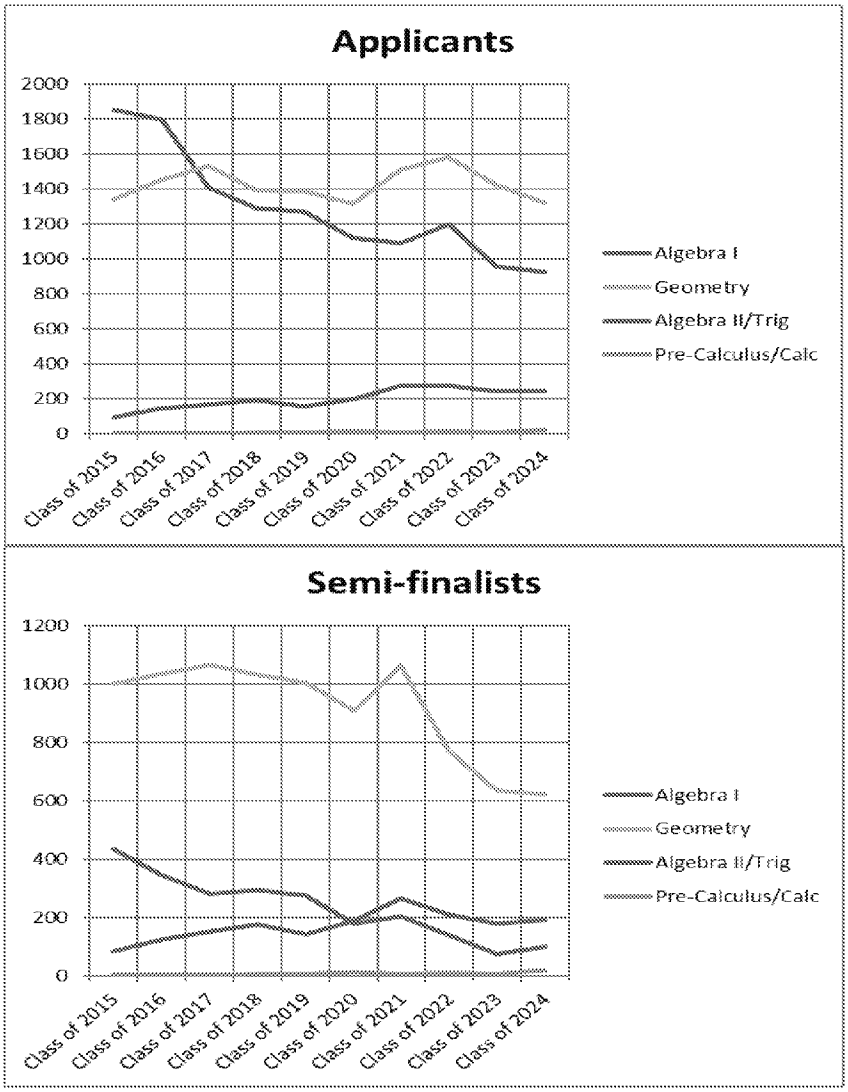
**Response:**

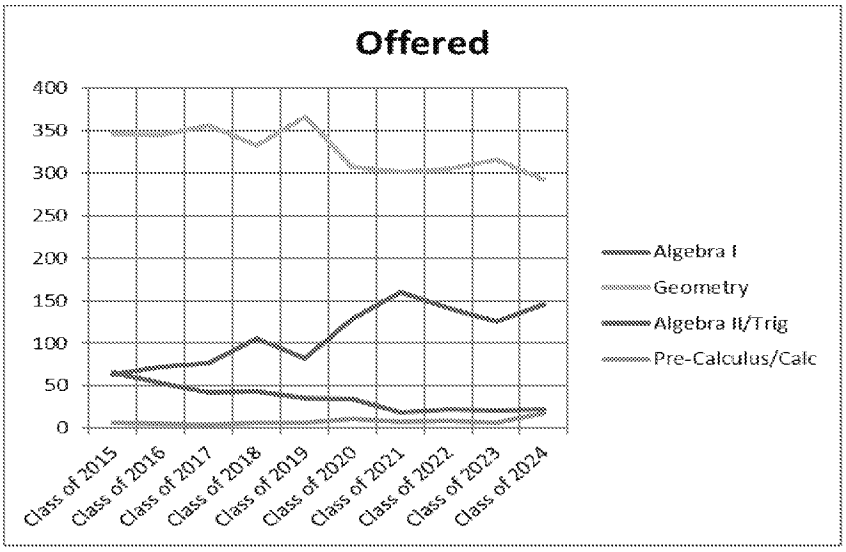
This response requires more time and will be forthcoming.

**173. Provide the past 5-10 years of Algebra 1 (or higher Math) data for FCPS TJ Applicants, Semi-finalists, and Accepted Students**

**Response:**

**Eighth Grade Math Course of Students Offered Admission to TJHSST, Class of 2015 to 2024 (SY 2011-12 to 2019-20)**






**174. Provide the past 5-10 years of data results related to Young Scholars (and LIFT) Applicants, Semi-finalists, and Accepted Students**

**Response:**

This response requires more time and will be forthcoming.